PROCEEDINGS OF THE 40th
INDIAN SCIENCE CONGRESS
LUCKNOW, 1953
PART I OFFICIAL MATTERS

PROCEEDINGS

OF THE

FORTIETH

INDIAN SCIENCE CONGRESS

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Dr. M. V. C. Sastry.
Dr. S. D. Nigam.
Sri A. K. Chaudhuri.
Dr. N. K. Sen.
Sri G. Paria.
Sri H. G. Venkatesh.
Sri D. K. Roy Choudhury.
Sri S. N. Sen.
Sri I. B. Gulati.
Sri T. S. Viswanathan.
Sri V. S. Ramchandran.

Central Institute of Education.
Dr. D. S. Nigam.

Indian Lac Research Institute.
Dr. P. K. Bose.
Dr. A. P. Kapur.

Indian School of Mines & Applied Geology.
Principal R. P. Sinha.
Prof. N. L. Sharma.

Indian Statistical Institute.
Sri D. B. Lahiri.
Sri S. B. Sen.
Sri C. R. Rao.
Sri N. C. Ghosh.

National Physical Laboratory.
Dr. K. S. Krishnan.
Dr. K. N. Mathur.
Dr. Ghai.
Mr. M. R. Verma.

Victoria College.
Dr. Shyama Charan Shrivastava.
Sri G. R. Jain.

Y. D. College.
Sri S. P. Srivastava.

GOVERNMENT OF INDIA & PROVINCIAL GOVERNMENTS

Directorate of Economics & Statistics, Ministry of Food & Agriculture.
Sri S. C. Chaudhuri.

Director of Medical & Health Services, Uttar Pradesh.
Dr. Inderjit Singh.
Dr. M. G. Chakravarty.
Dr. B. S. Yajnik.

Directorate of Plant Protection. Quarantine & Storage.
Dr. H. S. Pruthi.
Dr. V. P. Rao.
Sri L. N. Nigam.
Sri B. C. Joshi.

Defence Science Organisation, Ministry of Defence, New Delhi.

Dr. R. S. Verma.
Dr. N. B. Bhatt.
Dr. V. R. Thiruvenkatachar.
Dr. H. K. Acharya.
Sq/Ldr. M. K. Mookerjee.

Govt. of India, Atomic Energy Commission.

Dr. Jagadish Shankar.
Dr. V. T. Athavale.
Mr. Dharma Veer Bhatnagar.
Mr. Amar Nath.

Govt. of India, Delhi Polytechnic.

Dr. S. M. Das Gupta.

Govt. of India, Ministry of Education.

Mr. C. K. Chandiramani.
Mr. L. S. Chandrakant. .. ..

Govt. of India, Planning Commission.

Dr. T. Lakshminarayana.

Govt. of Jaipur.

Govt. of Nepal.

Prof. A. R. Mitra.

Govt. of Rajasthan.

Sri K. B. Danga Yach.

MERCANTILE FIRMS

Andhra Scientific Co. Ltd.

Mr. P. V. Subarao.
Mr. K. Chalapathirao.

Corporation of Calcutta.

Sri S. N. Sinha.
Sri Shil Kumer Khanna.
Mr. Ch. Narayana Rao.

Cindri Fertilizers & Chemicals Ltd.

Dr. K. M. Chakravarty.

Sri B. K. Sarkar.

Sri Benoy Lal Ghosh.

PROGRAMME OF THE SESSION

The Fortieth Session of the Indian Science Congress was held under the auspices of the University of Lucknow from 2nd to 8th January, 1953.

The inaugural meeting was held on Friday the 2nd January, 1953 in a special Pandal in the ground of the University of Lucknow in the presence of a large number of delegates, members and visitors. Over 5,000 guests and distinguished Scientists attended the session. There were about 30 foreign scientists present in the meeting. The presence of foreign scientists was the special feature of the opening of the session of the Congress.

Members of the Council of the Indian Science Congress Association led the procession and then came the Hon'ble Sri G. B. Pant, Chief Minister, Uttar Pradesh and H. E. Dr. K. M. Munshi, Rajyapal, Uttar Pradesh.

After the opening song 'Bandamataram' was sung, H. E. the Rajyapal, Uttar Pradesh, delivered his address opening the session of the Congress. Then Acharya Jugal Kishore, Vice-Chancellor, Lucknow University as Chairman, Reception Committee delivered his speech. After that Hon'ble. Pt. G. B. Pant, Chief Minister, Uttar Pradesh, welcomed the delegates, members and visitors with a short speech.

As Shri Jawaharlal Nehru, Prime Minister, India, could not attend the session in time due to some unavoidable circumstances, the address of the President was then read out. During this address Shri Jawaharlal Nehru came and after the Presidential address was over the inaugural address by Shri Jawaharlal Nehru was delivered.

SECTIONAL PRESIDENTIAL ADDRESSES

Saturday, the 3rd Jaunary, 1953:—10 A.M., Physics; 10-45 A.M., Chemistry and Medical & Veterinary Sciences; 12-15 P.M., Agricultural Sciences.

Sunday, the 4th January, 1953:—10 A.M., Mathematics; 10-45 A.M., Botany; 11-30 A.M., Engineering & Metallurgy; 12-15 P.M., Anthropology and Archaeology.

Monday, the 5th January, 1953:—10 A.M., Statistics; 10-45 A.M., Geology & Geography; 11-30 A.M., Zoology and Entomology; 12-15 P.M., Physiology.

Tuesday, the 6th January, 1953.—10 A.M., Psychology & Educational Science.

POPULAR LECTURES

Friday, the 2nd January, 1953 at 7 P.M. Popular Lecture 1.

Saturday, the 3rd January, 1953 at 6-15 P.M. Popular Lecture on "Soint Venat" by Sir Richard Southwell; at 7-15 P.M. Popular Lecture on "Some Highlights in Forty Years of Medicine" By Dr. Stanley White.

Sunday, the 4th January, 1953 at 6 P.M. Popular Lecture on "The Application of Science to Criminal Investigation" By Prof. C.R.M. Cuthbert; at 7 P.M. Popular Lecture on "My Impressions of Russian Science and Technology" By Sir S. S. Bhatnagar.

Monday, the 5th January, 1953 at 6-15 P.M. Popular Lecture on "History of Exclusion Principle" by Prof. W. Pauli; at 7-15 P.M. Popular Lecture VII.

Tuesday, the 6th January, 1953 at 6 P.M. Popular Lecture on "Inducing Clouds to Rain" by Dr. S. K. Banerji; at 7 P.M. Popular Lecture on "The Story of the Reconstruction of Fossil Plants (Film)" by Prof. Suzanne Leclerq.

Friday, the 2nd January, 1953 at 7 P.M. Popular Lecture No. 1.

Saturday, the 3rd January, 1953 at 6-15 P.M. Popular Lecture No. II and at 7-15 P.M. Popular Lecture No. III.

Sunday, the 4th January, 1953 at 6 P.M. Popular Lecture No. IV and at 7 P.M. Popular Lecture No. V.

Monday, the 5th January, 1953 at 6-15 P.M. Popular Lecture No. VI and at 7-15 P.M. Popular Lecture No. VII.

Tuesday, the 6th January, 1953 at 6 P.M. Popular Lecture No. VIII and at 7 P.M. Popular Lecture No. IX.

SPECIAL LECTURES

Saturday, the 3rd January, 1953 at 11 A.M., Lecture No. 1 on "The New Methods in Quantum Electrodynamics" by Prof. W. Pauli (Physics); at 12 Noon Lecture No. II on "Multipurpose Water Utilisation and the role of Social Scientists" by Prof. S. Tsru (Psychology Education and Engineering).

Sunday, the 4th January, 1953 at 11 A.M., Lecture No. III on "Antibiotics in Medical and Veterinary Practice" by Dr. Stanley White (Medical & Veterinary) at 12 Noon, Lecture No. IV on "The Structure of the Nucleic Acids" by Prof. A. R. Todd (Chemistry).

Monday, the 5th January, 1953 at 11 A.M., Lecture No. V on "Recent developments in the Experimental Study of Cancer" by Prof. Alexander Haddow (Medical & Verterinary); at 12 Noon, Lecture No. VI on "Relaxation Methods" by Sir Richard Southwell (Engineering, Mathematics & Physics).

Tuesday, the 6th Jaunary, 1953 at 11 A.M., Lecture No. VII on "The Structure and Total Synthesis of Nucleotide Coenzymes" by Prof. A. R. Todd (Chemistry); at 12 Noon, Lecture No. VIII on "Some interesting aspects of recent Medico-legal Investigations of Crimes" by Prof. C. R. M. Cuthbert (Medical & Veterinary).

SYMPOSIA AND JOINT DISCUSSIONS WERE HELD AS FOLLOWS:

Saturday, the 3rd January, 1953.

	Subject.	Section.
1.	Soviet Genetics	Botany (Jointly with Sections of Agricultural Sciences & Zoology & Entomology).
2.	Cultural Differences and Group Conflict ..	Psychology and Educational Science
3.	Motion of Compressible Fluids	Mathematics.
4.	Mineral Dressing in India	Engineering & Metallurgy.
5.	Titania and Titanium	Chemistry.

Sunday, the 4th January, 1953.

1.	The Problem of Food Deficit in India ..	Physiology (jointly with sections of Medical and Veterinary Sciences, Zoology and Entomology, Chemistry, Geology and Geography and Agricultural Sciences.)
2.	Fat Metabolism	Chemistry (jointly with Sections of Physiology and Medical and Veterinary Sciences.)
3.	Cosmic Rays	Physics.
4.	Land Utilisation Survey	Geology and Geography.
5.	Measure Theory	Mathematics.

Monday, the 5th January, 1953.

1.	Ion Exchange	Chemistry (jointly with section of Agricultural Sciences.)
2.	The Physiological Efficiency of Man and Animal as Conditioned by Climatology and Nutrition ..	Physiology.
3.	Industrial Development in the Damodar Valley ..	Engineering & Metallurgy.
4.	Mathematical Teaching and Research in India ..	Mathematics.
5.	Combustion and Flame and Explosion Phenomena ..	Physics.

6.	Statistical Problem in Econometric Models ..	Statistics.
7.	Fossil Plants as Criteria of the Palaco-ecological Conditions	Botany.
8.	Discussion on Medium of Instruction at the University Stage	Mathematics.
9.	Statistical Methods in Biological Sciences ..	Statistics.

Tuesday, the 6th January, 1953.

1.	Stochastic Processes	Statistics.
2.	Training and Proper Utilization of Personnel in Geology, Geography, Engineering and Metallurgy ..	Geology & Geography.
3.	Recent Advances in Thermo-dynamics ..	Physics.
4.	Community Projects	Agricultural Sciences (jointly with the section of Medical & Veterinary Sciences, Psychology and Statistics.
5.	Recent Advances in Differential Geometry ..	Mathematics.

MEETING OF THE COMMITTEES.

Inauguration of the Indian Science Congress on Friday, Jaunary 2nd, 1953, at 10-30 A.M., General Committee of I. S. C. A. met on Tuesday, Jaunary 6th, 1953 at 2 P.M.

Meeting of the Sectional Committee on Saturday, Jaunary 3rd, at 9 A.M., Sunday, January 4th, at 9 A.M., Monday, Jaunary 5th, at 9 A.M., Tuesday, Jaunary 6th, 1953.

Council met on January 2nd; at 6 P.M., and on January 6th. Executive Committee met on January 1st at 4-30 P.M., and on Tuesday, January 6th at 6 P.M.

SOCIAL FUNCTIONS.

January 2nd,	At Home, Entertainment,
January 3rd,	Local Excursions, At Home, Entertainment,
January 4th,	Local Excursions, At Home, Entertainment,
January 5th,	Local Excursions, At Home, Entertainment,
January 6th,	At Home, Entertainment,
January 7th,	At Home, Entertainment,

OPENING PROCEEDINGS

SPEECH BY ACHARYA SHRI JUGAL KISHORE, V. C. LUCKNOW UNIVERSITY, AT THE INAUGURATION CEREMONY OF THE 40TH SESSION OF ISCA.

Sri Rajyapal, Mr. Prime Minister, Mr. President General and Ladies and Gentlemen,

On behalf of the Reception Committee and the Lucknow University, I have the pleasure and the proud privilege of according a hearty welcome to the Members of the Indian Science Congress, You, Sir, the President General and the distinguished scientist guests from abroad who have very kindly even at great personal inconvenience responded to our invitation. We are indeed fortunate in having the 40th Session of the Science Congress held at this humble seat of learning as it will afford our young research students and all those interested in the promotion of scientific studies an opportunity of coming in closer contact with the important personalities whose contribution to science have been remarkable and to express our feelings of gratitude and our sincere appreciation for the services they in co-operation with their fellow scientists all over the world are rendering for the promotion of scientific attitude towards life and for exploring with patience and perseverance the unchartered frontiers of knowledge. The holding of a session every year at different centres of learning enabling scientists working in specialised branches of knowledge an opportunity for exchange of views, I have no doubt, be necessarily contributing greatly to the synthesis of scientific knowledge and should, I presume, be a healthy corrective to the dangers arising out of one sided specialisation. There is, in my opinion, a great need for more effective co-ordination and collaboration between scientists engaged in research in any particular branch of knowledge and for a fuller understanding of the progress, different branches of knowledge have achieved in their respective sphere. You will be interested to know that we in this State, with six universities with their respective faculties of science, have been wanting to effect a healthy co-ordination without in any way undermining the autonomy of the university which they must necessarily enjoy in academic matters and we should welcome any suggestion that this premier science organisation can give to make our efforts successful.

We in this State, the largest in the Indian Union, can take legitimate pride in the fact that within the last five years the Indian Science Congress is holding its session for the second time. We have six universities, five of them of residential teaching type and one an affiliat-

ing and examining type. Of the five, one at Roorkee is exclusively for Engineering. We have two Medical Colleges at Lucknow and Agra imparting instruction and training for the graduate and postgraduate courses in Medicine and Surgery, one Agricultural College at Kanpur with research sections imparting post-graduate teaching, one institution each for sugar and oil technology at Kanpur. One Veterinary college at Mathura opened five years back and many other agricultural and technical schools located at different centres in the State. This State has also been fortunate in having at Lucknow one of the eleven laboratories and institutes which the Central Government in pursuance of their scheme of providing facilities for higher scientific studies and researches have established. The Central Drug Laboratory and Institute is a fine specimen of what a laboratory should be and so far as I know no pains and expenses have been spared to make it a first rate institution. There are besides a number of other institutions which have grown up during the last five years since the attainment of independence. Of the new institutions, Palaeobotanical Institute ranks the most important. It owes its inspiration to the late lamented Prof. Birbal Sahni who in his life time conceived the idea of setting up such an institute, unique of its kind in whole of Asia. His own contribution to this specialised branch of knowledge had won him a world wide reputation. Due to the indefatigable efforts of Mrs. Sahni and Research workers and to the encouragement and financial support it received from the Central Government, the institute has now a fine building and a museum whose foundation was laid two years back and which will be opened to-day by our Prime Minister. We are indeed proud to have such an institute in the close proximity of the Lucknow University and I have no doubt that both will profit by each other's association.

Without going into details about the various activities connected with scientific studies and researches, I would refer you to the very handy and informative 'souvenir' published by the Reception Committee which would convey to you the progress this State has made during the last few years and the plans it has formulated for implementation in the near future. I will only take the liberty of making a very short reference to the various schemes of studies and researches this University is conducting in different departments of Faculty of Science.

Recently we have been able to add to our facilities, both in space and equipment, due to grants from the Government of India, U. P., and the public of the State on the occasion of our Silver Jubilee celebrations. These additions specially the new departments of Geology, Mathematics, Psychology and the extensions to Zoology, Chemistry and Physics blocks have enabled us to arrange the sectional meetings of the Congress in close proximity to each other.

In the different departments of our Science Faculty, research work is being carried on both, fundamental as well as applied aspects of the various sciences.

In Chemistry, in addition to supersaturation and colloid Chemistry, search for new insecticides and fungicides to equip us better to fight pests and diseases is being carried on. The work on solubilization is being investigated with a view to have an insight on its industrial application.

Work on separation of isotopes by thermal diffusion and slow neutron-scattering has been undertaken in the Physics Department with grant from the Atomic Energy Commission.

The Botany Department is specialising in plant pathology, virology and the effects of trace elements on plant growth with a view to improve the agriculture of the country. This department has been a good centre of palaeobotanical research so ably developed by late Dr. Sahni. Due to his efforts the Department of Geology was opened in 1943 where work on micro-palaeontology is being carried on.

In the Mathematics Department work on pure as well as applied branches of the subject has been undertaken. Researches on non-differential functions, operational calculus, Fourier series, Reimanian Geometry, crystal dynamics and Hindu Mathematics have been undertaken.

In the Zoology Department, Helminthology, Entomological and physiological aspects of Zoology have received considerable attention. Parasites of food, fishes and domestic animals have been studied with a view to find out the life history of the parasites that cause diseases.

Researches in systematic, industrial and social psychology have been carried on in the Psychology Department. Work on 'Fatigue and efficiency in Textile industry' and 'Group Tensions' have been undertaken with success.

The proximity of the Central Drug Institute has afforded a close collaboration with the Chemistry, Botany and the various departments of the Medical Faculty. We trust that this collaboration will considerably increase in the near future and joint research schemes will be launched which will improve the lot of poor helpless citizens of this country.

But there remains much more to be done by the universities and other agencies to train personnel for Fundamental research and for the effective application of the technical knowledge already available. No country much less ours, so backward technologically, can succeed in utilising the vast material sources and the fund of scientific knowledge

available to the best advantage unless it has an army of highly trained technical staff, well equipped. Much of the success of our Five Year plan will depend upon the personnel available for this specialised kind of work. The framers of the plan have envisaged this and have suggested that more science laboratories should be opened and more emphasis on science education should be given by the universities.

We are indeed very fortunate in having at the head of the Central Cabinet one who is fully alive to this urgent need and who has done all that was perhaps possible under the circumstances to promote and encourage scientific studies and provide facilities for the purpose. We are indeed very happy to have him to-day amongst us and we are grateful to him for having agreed once more to inaugurate this 40th Session of the Science Congress. His presence to-day must be a source of great encouragement to the scientists assembled here and of inspiration to all those interested in the promotion of scientific studies and researches as we all presumably are. No scientist, I have not the least doubt, could have expected more from any one else occupying that exalted position.

Whatever misgivings critics may entertain about the abuses to which scientific discoveries are being put to and are likely to be in the future, the speed and tempo of scientific advance has been so much accelerated during the last few years, that it will be wiser to recognise this fact and to adjust our morals and politics accordingly. The achievements of science during the last few decades have been overwhelming in fighting distress, poverty and drudgery of life and have been on the whole more beneficial than the sufferings which its abuses have caused. To minimise the abuses it is, therefore, necessary to make the public more scientific minded and make available in adequate quantity the material goods and social welfare benefits to every home. Our policies and our outlook need reorientation which our universities and organisations like this Science Congress can and should do much to bring about.

The remarkable achievements of science have been due primarily to its open-mindedness in examining any new data or phenomena and also to the fact that it had very few assumptions to start with and those also held tentatively. If science continues to function in such intellectual climate no subject can be beyond the scope of its investigations. The advances which Psychology have made in explaining many factors previously considered mysterious should inspire hope that if strictly scientific cannons are applied without prejudice to other subjects also of human interest, the world may be richer and wiser by the knowledge thus gained and prejudices entertained against science may be counteracted. Otherwise Science has no other limitations except those conditioned by the technique it employs in seeking knowledge. In other words, means for all seekers of truth alone can determine the character of the end sought for.

During the few days our guests will be here, it will be our pleasure and endeavour to make their stay as comfortable and enjoyable as possible enabling them thus to devote themselves without inconvenience to the more important deliberations. The rains have unfortunately interfered with our arrangements but the fact that these showers are a great blessing to the agriculturists may afford you some consolation.

Wishing you all a very happy and fruitful New year.

ADDRESS BY DR. K. M. MUNSHI, GOVERNOR OF UTTAR PRADESH AT THE 40TH SESSION OF THE INDIAN SCIENCE CONGRESS AT LUCKNOW ON 2ND JANUARY, 1953.

I consider it a privilege as Governor of Uttar Pradesh to welcome you, delegates and distinguished visitors from other parts of the country and abroad, to Lucknow, the State Capital. You represent a remarkable cross section of the national as well as international intelligentsia of the modern world, and your presence here has a special significance for us as this is the third time that Lucknow has the good fortune to receive the Indian Science Congress. I am also very glad that the Prime Minister, in spite of his heavy preoccupations, has found time to be in our midst to give us the benefit of his guidance.

The Indian Science Congress association, since its modest beginning in 1914, has grown steadily. Its membership has risen from 100 to 2,000. In spite of the set-backs which the Second World War brought in its way, the association has succeeded in furthering research activities in the various universities and academic centres and it has established, as the presence of the distinguished visitors shows, valuable contacts with scientists of other nations.

In view of the problems facing free India, scientific research has assumed great importance both for industrial and agricultural development. India's future is closely bound up with scientific research; and one of the striking achievements of India during the last few years has been the expansion of Government scientific services and the establishment of the Council of Scientific and Industrial Research. As a result of its activities, several national laboratories and research associations have been established. Uttar Pradesh has, as you know, two national laboratories, one of which—the Central Drug Research Institute—is located in Lucknow.

In July last year, the foundation of the Scientific Road Research

Institute, the 8th in the chain of the eleven National Laboratories, was laid. The Central Electro-Chemical Research Institute at Karaikudi, the Central Leather Research Institute at Madras and the Central Building Research Institute at Roorkee will also be opened shortly. The Central Salt Research Laboratory at Bhavnagar, and the Electronics and Radio Engineering Institute at Pilani are also under consideration.

In August last, the Indian National Scientific Documentation Centre was opened at the National Physical Laboratory with the aid of UNESCO. Among the achievements of the year can be counted the Monazite Factory at Alwaye, the manufacture of special inks at the National Physical Laboratory; a project for the production of Titanium and another for wind power development. We owe all these achievements in such a short time to the energy and drive of Dr. Shanti Swarup Bhatnagar and the inspiration, guidance and encouragement of the Prime Minister.

The various University research centres have also been making considerable progress. Since this congress was established, forty years ago, universities have multiplied in this country and a major part of their budgetary provision has gone towards the development of scientific departments. The main reason why the universities have not been able to make progress is financial stringency and the drift of scientific personnel. Our universities have a research potential of considerable magnitude; but it needs intensive and concentrated efforts to bring it on the international level.

The older research institutes in Agriculture have expanded, as also the programme of research carried on by the Indian Council of Agricultural Researches. The All India Agricultural Research Institute, the Forest Research Institute, Dehra Dun and the All India Veterinary Institute have also been taking a lead in conducting research, the last two being now international centres for South East Asia. Shortly Lucknow will have a full-fledged institute of Sugar Technological Institute the foundation stone of which was laid last year.

During the last year considerable progress has been made in the very important research in wheat rust, which has evoked interest among leading plant pathologists of the world. Research in dry farming has opened up a new line of progress in the production of millets, as such farming is proved to give a higher yield, to prevent soil erosion and to provide double value as food and fodder. Research has recently also succeeded in evolving an agronomic method by which 20 plants of potato can normally be obtained from one 'seed' potato.

I may draw attention to an aspect of scientific research on problems in which I am interested and which I consider of paramount importance to this country. The impelling factor, at the present moment, is to

further production and fight erosion. Both are aspects of the problem of our survival.

Our population is already too large; it is growing at the rate of 12.5 per thousand. We have to feed not only a large population of human beings, but an increasing population of cattle too. Science has, therefore, to be directed to the problems of the soils, plants and animal tissues. Agriculture is not a mechanical industry; biology plays a major part in it, and permits of relatively little human controls. Compared to our population, we have a limited overall acreage. Breeding high yielding or resistant varieties of crops takes a long time. It has, therefore, become necessary to direct immediate attention to the latest line of progress, for instance, in the study of the ionic exchange capacity of soils and ionic replacement of crystals; to producing new types of plants to suit special areas such as desert; to evolve drought-resisting crop plants and fast-growing desert vegetation to secure soil stability, and to evolve weedicides of the synthetic hormone type, which have recently come into prominence.

The progress of intensive cultivation envisaged by the Five-Year Plan may possibly face us with strain on the productivity of the soil which the use of tractors and heavy scientific fertilizers would involve. If, therefore, our existing and potential resources of soil, water, plants and animal have to expand, the best and most modern scientific principles and techniques must be studied, devised and expanded. In my opinion, therefore, the study of the intimate relationship between the natural elements of our land, their ways of expansion and the productive capacity of the soil in food crops has to be pursued intensively. The study of the basic mechanism involved in realizing the sun's rays and cosmic rays may also be paying. I cannot help feeling that if the present rate of increase in the world's population has to be fed, the control of cosmic rays and solar energy will have to find some results, sooner or later, which would yield a food crop which will be rich in nutrition and at the same time leave the soil enriched, both in energy and productiveness.

At the same time, I would humbly draw the attention of this Congress to the scope and limit of physical sciences, so essential for our progress. Science is particularly concerned with knowledge which can be brought into practical relation with external life. And during the last two centuries it has enlarged the scope of knowledge and acquired mastery over the forces of Nature. But its triumphs have been proving dangerous in the hands of mankind, mentally and morally unready for the handling of powers so great and perilous. Science has given power, but the mind which has to use the power has remained fixed and static. This we should never forget when we emphasize scientific achievements. The usefulness of Science is, therefore, being limited in its

power and scope, for it has not been founded on an expanding view of life; it has not given to man a broader vision of the goal and a clearer perception of the direction in which man is to proceed.

Science, therefore, cannot proceed in isolation. No scientist can forget what the ancient sages sang "सा विद्या या विमुक्तये" learning is for freedom: freedom from want, freedom from fear; but more freedom from the shackles which fetter man to a restricted vision of his mission. The triumph of Science, therefore, depends upon whether the centre which is to operate—man—emerges out of his narrow egoistic, passion-ridden self to a widened consciousness of higher Truth and Beauty and to a nobler appreciation of the meaning and purpose of life.

WELCOME SPEECH BY PT. GOVIND BALLABH PANT, CHIEF MINISTER, UTTAR PRADESH.

Mr. President, Sri Rajyapal, Delegates to the 40th Session of the Science Congress, Ladies and Gentlemen;

I have great pleasure in extending a very warm and cordial welcome on behalf of the people and Government of Uttar Pradesh to the Delegates of this 40th Session of the Indian Science Congress. We have the privilege of having this Congress in our midst for the third time and I am grateful to the Indian Science Congress Association for their having selected Lucknow as the venue of this Session of the Congress. We have been looking forward to this occasion since we received definite information about the choice having fallen on this central city for holding this session. Lucknow has no claims to antiquity like Allahabad, Banaras, Prayag or Kashi but it bears a high reputation for synthetic and refined culture, urbanity of manners, unity and tolerance. These are usually the attributes of science and so it is but in the fitness of things that the Congress should have assembled here. Lucknow is steadily growing into a centre of learning. You need no introduction to this University within whose campus we are meeting here today, but close to it are situated the Drug Research Institute and the Palaeobotanic Institute which bear testimony to our deep regard for Science in this city and our desire to develop it. The Palaeobotanic Institute also reminds us of the dedicated life of Sri Birbal Sahney who devoted the best in him to the cultivation of science, and even when he left us, left his all for that very cause. That indicates in a way also the spirit of the scientists in our country.

The Indian Science Congress has played an important part in the development and stimulation of scientific thought and knowledge in our country. Science is now everybody's business and it must be the effort of people who are interested in the growth of science to create an awareness for the problems of science and to impress upon the populace in every country the urgency of giving priority to the all embracing problems of scientific research and investigation. In a democratic country, in particular, unless the average citizen comes to realise the place that science should hold its progress may not be as rapid as many would like it to be; for ultimately the common man is the master of the situation. I should be only repeating a trite platitude when I say that this is the age of science. Our entire social fabric today rests on the twin pillars of science and technology. Man's life in all its aspects is thus affected and in a large measure determined by the progress made in the field of science. Our elementary and essential needs are to a large measure met by the modern discoveries of science which has enriched life in various ways. It is but proper that in these circumstances science should attract greater attention than it did in the past. We, to a large measure, today are able to produce and to enjoy our even elementary comforts with the aid of science which contributes largely to all amenities and even to all entertainments. We have to depend on science for not only social and material progress but also for national security. In these circumstances we in this country who have lagged behind under the suppression of alien rule for centuries have to devote the best of our time and resources to the extent we can afford to make up for the accumulated deficiencies and arrears of centuries. So that we may achieve that end, it is necessary that our scientists should concentrate, for the time being, on the problems which confront us in this country. The standard of life is still low. We have to liquidate many of the evils that must follow in the wake of illiteracy, ill-health, poverty and other shortcomings. For all this we need the co-operation of modern countries and of the scientists all over the world. For that we appeal to the Delegates who have assembled here from overseas, from the most advanced centres of science. The world has come to realise that prosperity like peace can be but indivisible and it is in the interest of the advanced countries that the backward ones should also be raised to the proper level. So while we will look forward with hope and confidence to their co-operation and assistance we have to give our thought to the progress of science not only for the material benefits that accrue from it but also for the discipline that ensues from the study of science for the great truth and principles which can be inculcated only by the pursuit of truth. Science has also revealed to us the vastness and magnitude of the Universe. Our own earth, the planet in which we live is but a speck, a veritable drop in the ocean and yet we find that all phenomena are inter-connected regardless of any distance of space and time. So these revelations have been of greater

value in the eye of a discerning man than the material advantages that have been reaped by millions on account of the selfless labours of scientists all over the world. We owe not only our food and raiment, but even our longevity and our health to the discoveries of scientists. Science has also revealed the oneness of life and if we can remember that, much of the cruelty that we see in the world towards dumb animals would perhaps be relieved even if it is not stopped altogether. Science has done a lot of good for man and science has above all shown how the pursuit of truth has to be conducted dispassionately in a detached spirit. Science has no prepossessions and no prejudices. Doctrines reverently cherished are abandoned whenever experienced observation proves that they cannot hold their own in the light of greater experience and minuter investigation. There was a time when the number of elements was supposed to be irreducible and the elements, each of them, were supposed to be inviolable and inconvertible. The poor alchemist came in for his full share of ridicule, but we have outgrown that stage. Now all elements are made of but one substance and there is only one substance which in different forms, different structures, gives us different material things, and that is a great discovery. Science disregards what it finds to be wrong even if it has stuck to it for ages. Age-long notions have been abandoned without any ado whatsoever. We have seen that matter has become almost immaterial and energy has become material. Thus the discoveries of science show that there is room for further investigation. The tree grows; it drops its leaves. So let us not forget the seed and the solid earth on which alone the tree can stand.

Science has its limitations. Countries which are free from want are not free from fear. We find that many are haunted with the spectre and terror of the atom bomb and bacteriological warfare. So even though science has given us many of the valued things of life it has failed to give us a higher vision, greater peace and fuller contentment. Without these the material gifts and bounties of science, howsoever prolific they be, do not yield any adequate results. So we have to go deeper into these problems and we are thus driven back to what we were told ages ago that it is only through faithful adherence to eternal verities and moral rearmament that the benefits of science can be fully enjoyed by the human race. We should concentrate on them. We have again to write it out, to inscribe it and blazen it forth in letters of gold, if possible, that wisdom is better than knowledge and knowledge unless combined with wisdom can spell disaster. That is the old truth, that is our ancient heritage and while pining for the benefits of science we also wish that we may preserve what had kept us happy in the midst of misery. So let us give its due to everyone, Paul and Peter, but let us not forget the basic fundamentals which have formed the foundation of human growth and humanity from the early dawn of civilization. Let

us then combine wisdom with knowledge, philosophy with science, prosperity with grace and joy with beauty. If you can succeed in doing that we may come nearer the ideal which humanity has placed before itself from the beginning and which we would now aspire to achieve.

SPEECH OF PT. JAWAHAR LAL NEHRU ON THE OCCASION OF 40TH SESSION OF THE INDIAN SCIENCE CONGRESS.

Mr. President and friends,

I must apologize for my unpunctuality. But the fault was not mine really. I sat for three hours at the Delhi aerodrome waiting for the fog to lift and the fog was reminiscent of the worst type of London fog.

I have come here to-day not to speak on scientific subjects but rather to listen to something and to learn something. I intended coming here to learn and listen to something and more specially to offer all of you welcome on behalf of the Government of India—those scientists, eminent scientists, who have come from abroad and those who have come from various parts of this country. I hope many of you have realised that the Government attaches great deal of importance to science, to the uses of science, and therefore also to those who are high priests of science today. During the past few years the Government has tried, within its capacity, to help the development of science in various ways by having a number of national laboratories, institutes and others built up and many of you who are present to-day are no doubt working in these very types of institutes. For my part I think that one of the most satisfactory features, among the other features good or bad—of the last four or five years has been the building up of these great laboratories and the opportunities thus afforded for the development of science in this country. Now it is curious that, in a sense, all of us and practically every country worship in some way or other at the shrine of science and yet, doing so, we seem to keep science and what science stands for in a particular corner of our minds and do not allow it to interfere with the rest of our activities. Hence some kind of dual approach to problems is made by most of us, probably by politicians, most of all. Politicians will come and perform various ceremonies in connection with scientific institutions and say something about the great virtues of science but in some other activities they are not likely to indicate too much either the temper of science or the training of science but really I mention politicians because I am one and I think I should begin by giving my own tribe. But it applies to others too; oddly enough it sometimes applies even to scientists, who in their laboratories are very good and

they specialise in their particular subject. Outside their lecture halls and laboratories they appear to become something entirely different from what a scientist is supposed to be. And yet no person will realise first of all the quite astounding changes that have taken place in the world because of the development of science and its technique. The last 100 or 150 years have changed the face of the world enormously. They have affected every kind of human institutions, human lives and human thinking and perhaps, oddly enough, again they have not affected human thinking quite so much as they have affected human life although they have affected it inevitably. We take many things for granted many things produced by science. We are surrounded by them; we cannot help it. We cannot escape them and we take them for granted. But they have not produced often enough an adequate impact on our minds. I am not talking about individuals. Of course, I am talking about the generality of the people. Our minds continue to function in what might be called the pre-scientific age and sometimes even an earlier age and so, we have this very peculiar contention of something which is obviously the product of the human mind i.e. science and all that has happened. It has come out of human mind and yet the human mind is lagging behind its own product. This disparity, possibly, is one of the reasons why we are tied up into knots and why, while on the one hand we talk rather glibly of one world, which is perfectly true because scientifically and by the development of communications and the like, we become a very tight one world. And yet any person can see that we are as far removed from the one world in spite of all this coming together as anything can possibly be. In fact, parts of the world resent even the existence of other parts. Parts of the world want to destroy the other parts of the world.

Well, surely that is not the kind of prelude to a one world. So we get this extraordinary contradiction. While reason, logic and all modern trends in life point to the closest co-operation all over the world, human wishes, passions, prejudices or whatever they may be try to go as far away from this idea of one world co-operation and continually think rather in terms of elimination of one or the other or the destruction of one or the other. They do not at all appreciate or understand that it is possible for any such co-operation to take place in the world as it is today. Whether scientists or politicians or others can solve this riddle or not, I do not know, but obviously the future of the world depends upon that, depends upon it, more especially because the alternative now is rather terrible to contemplate and so how are we to approach this problem. If the scientists go on functioning in an ivory tower, where they will do no doubt some good, if they come out of the ivory tower and help in solving the problems of the age, they will do a great deal of good, as they have done indeed. But somehow even the solution of limited problems does not necessarily take us much further

in the solution of the major problems of the age and the avoidance of this tremendous conflict which seems to envelop us all the time and which results in lowering the scientific temper of the age. The individual scientist may be exceedingly good at his particular kind of work, but as I said just now, even that individual scientist becomes a prey to prejudice in other spheres. Now what happens in these other spheres we can see all around us, that on account of this destructive fear, anger at each other the critical faculty ceases to function in groups, in nations and to some extent in individuals. Now if the critical faculty does not function that means the scientific faculty does not function, because science must be critical; it cannot accept or reject things wholesale without analysis, without criticism and without examination. So we see the complete or the large scale extermination of the critical faculty today in the world. Outside the limited spheres, that is when we consider world problems, when we consider the kind of problems, let us say, that an unhappy foreign minister has to consider, one finds very little of the critical faculty left but only complete rejection of something, denunciation of something or complete acceptance of something with fulsome praise of it. Every body thinks in terms of just black and white, one person is black and the other person is white and there are no shades of grey left. Apart from this we have a feeling, which again appears to me rather odd, that others should be likened to ourselves, that is to say, each group imagining that others should necessarily be like them in ways of thought, ways of living, ways of action and ways of everything; and then two or more groups think like that and if I may bring in the religious parallel to the domain of politics and proselytize too much, they come into conflict. I should have thought that one of the obvious lessons of this world was that the world is very various, outworldly so. Obviously climates differ. Climate has a powerful effect on human beings and environment has a powerful effect. Even in India it is no good asking a person coming from south of India to go about in a fur coat, which is very necessary in the Himalayas. All this is India, but this crude example can be followed by better examples. But it is good enough. Nevertheless people seem to think that others must shape themselves, model themselves according to a certain scheduled pattern, which means like themselves. Now this is very odd and this business of each individual thinking that he possibly or his group is the model of behaviour, model of living and model of thinking, which others must follow. I suppose, each one of us is rather egocentric, nations of course are so. But it does make a difference. Each one of us is the centre of a circle, as we probably are. In that way it does make a difference. We are the circumference of that circle. If it is a very small circle with a narrow circumference, well, we become narrow. If it is a broad circle, the broader it is, possibly the broader the outlook that we might possess. Now it is not for me to criticise others, and especially this great and varied diverse world. But

even in my own country I can see all these different trends at work, these urges. India is a country which has shown in some ways a remarkable unity even when split up in various ways. There is an essential unity about it and India is also a country with a very remarkable diversity and the problem in India is to maintain both, not to crush the diversity and obviously not to lessen the unity—in fact to increase it. We find forces at work and individuals who want to regiment it to the extent of putting an end to all that richness of life in India and each person wanting to make the other function as he does himself, even in small matters of clothing. Now, as I mentioned, it is quite easy for me in Lucknow to wear a certain type of footwear which will be completely inappropriate in Ladakh. In fact I won't survive—my foot won't survive if I wear chappals in Ladakh. I have to wear thick boots with woollen lining there in order to survive apart from other clothing. The same applies to so many other things. This proselytizing spirit of imposing yourself on others, whether it is a question of language or whether it is any other question, is there. Personally, I rather like the crusader. There is something attractive about him—something good—and it is the crusader who has made a difference in this world, a person with a certain missionary spirit for a cause, forgetting oneself in that cause. But, of course, the crusading spirit sometimes can be exercised for wrong ends and bring about wrong results. I am just hinting at these various things because the only way really to consider them is what might be called the even temper of science which does not allow us to run away with particular individual fans and fancies, which helps us to get out of those narrow circles in which as an individual or as a small group we may live, whether it is a geographical limiting factor or whether it is a small part of a country or the whole country or in any other way of thinking or living; and to recognize that people are various. They should be various, and why should not they be different. That contributes to the richness of human life and experience, not to try to impose ourselves on others in the political or the economic field. Of course we talk of words like imperialism and the like which means the political imposition and the economic imposition, economic exploitation and all that. Those are generally understood, and most people in the world feel that we must not have that, we must put an end to this kind of imperialism which dominated, let us say, the 19th century. It is largely disappearing and will no doubt disappear. It is disappearing not only because it was not a good thing in the balance, but because it really cannot exist now because of the new forces that have arisen. But there are other ways also. Apart from that old type of imperialism there are other ways of interfering with others. Well, in any human society there is bound to be some interference, some regulation, some discipline. But I take it that the democratic way of looking at things is to keep that interference to the minimum. There is of course always

the problem of modern life, demanding more and more centralization. That is essential and yet centralization to some extent always comes in the way of democracy in a sense or individual freedom and one has to balance the two. I am putting these matters before you because these problems trouble us now a days, trouble my mind, how to balance these respective things which are good, but which carried to an extreme, are not good like nationalism. All of us in this country have been bred on nationalism. It has been to us a liberating force—a good force—and yet, obviously, that very nationalism, carried to an extreme, becomes a narrow thing, a limiting thing, a restrictive thing and a bad thing. A thing which is good may not be good in different circumstances or in a different degree, and we see aggressive nationalism still functioning. We see even the idea of doing good to others becoming so aggressive that it becomes a nuisance whether national or international. The idea of making others to conform to a certain pattern of your liking—and your liking may be a good liking—nevertheless the compulsion of making others conform too much may have bad results, and it usually has bad results. At the same time there has to be some conformity. One cannot go to pieces, each individual doing what he likes in organized society. So all these things conflict with each other and one has to find some balancing factor—how to preserve individual freedom, how to preserve the richness of diversity in unity and so on and so forth. Now where does science come into this picture? Of course science comes in and should come in because the time that the science can merely produce things or improve the material lot of man is not quite good enough. It is good of course. It has to do it, but more specially in a country like India, which is economically backward where standards are very low, our very first priority is to raise those standards. It is no good talking about things of spiritual and cultural advancement to hungry people. We have to give them the primary necessities of life, whether it is food or clothing or housing, or some other things and only then can we think of the rest. Nevertheless, even though we might lack the primary necessities and we try to fulfil that lack, the other problems face us all the time, press upon us and tend to upset us as they upset other countries too. A scientist has, therefore, to tackle other problems also, help in tackling them and the best help the scientist can give is to try to produce that critical faculty in considering problems, that evenness of temper, that objective way of looking at things which if enough of us cultivated would undoubtedly help tremendously in lessening tensions, national and international, and in going some way towards the solution of those problems. So we invite you, scientists, to help us in solving our material problems which are highly important, whether they are of food or other necessaries of life so that we may raise the standards. Because without that nothing can be done and we have to face continual danger, grave danger, in many ways. But we invite you also to help in dealing

with the larger problems, social, economic, psychological and all that, and finally to bring about, as I said, that temper of science which, unless we develop, the weapons and all the good that science has done, can be used for evil ends and we ourselves are swept away by passions of the moment and to use the great weapons that science has given us for wrong ends and that would be the tragedy of science and the scientist as it is to some extent even today. So I welcome you all on behalf of our Government and assure you that to the best of our ability we shall encourage the development of science in this country and ask the scientists here to associate themselves above all in the solution of our problems. It may be that the scientists might not get the same financial inducements as others do. Somehow financial return has seldom been tagged on to learning in any country. Perhaps it is as well though it is not well if this means a pressure of circumstances on the worker in science or elsewhere. In India, in the old days when some kind of theoretical or practical division of society was aimed at, the man of learning was put at the top, but he was not supposed to have either financial power or indeed much resources or political power except rarely. His power of learning was supposed to keep him at the top. While the modern division of society as practised does not give quite that theoretical place to the man of learning and other people usually get at the top in that sense of the world, but the fact remains, and I am talking about India for the present, that the scientist must inevitably occupy a more and more important place in our society. In the very old days probably the priest occupied it. We may consider as I said previously the real scientist is the priest of today in that sense. To some extent of course they talk in priestly language which most people do not understand. Then in India in the last hundred years or more the administrator became the top person, ordering about everybody else. Even now the administrator on the whole considers himself and occupies a very important place—probably the top place. An administrator is important of course, but I do not think he is quite so important as he thinks he is. Just as the politician is not quite so important as he thinks he is. Of course when I use the word administrator I use it rather in the sense of the professional administrator. The politicion of course hovers about. He is sometimes an administrator sometimes not. People seem to think still that scientists, experts, engineers and the like they are there to be consulted as experts, and then pushed aside and the wise administrator comes to a decision. Yes, in coming to a decision one has to see every aspect of the question, and if, as often happens, the expert sees only one aspect very intensely he may not be able to judge aright about the other aspects. That is true, but still this business of thinking that a person who sits at the head of an administrative office is more important in the scheme of things because he does not know much about any particular thing than the person who knows much about anything is, I think, wrong

and we must gradually adapt ourselves to thinking that the administrator has also his place. He should not be all over the place. So we should fashion a society where the real scientist will play a more important part, in developing, in helping that society to function and in promoting that scientific temper or even temper which has become quite essential not only for progress but even if we have to survive. So I welcome you again. Thank you.

For Circulation Amongst Members of the General Committee.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE OF THE INDIAN SCIENCE CONGRESS ASSOCIATION,

1952.

ANNUAL SESSION

1. The Thirty-ninth Session of the Indian Science Congress Association was held at Calcutta from the 2nd to the 8th January, 1952 under the auspices of the University of Calcutta and was presided over by Dr. J. N. Mukherjee, D.Sc., F.R.A.S.B., F.N.I.

2. Sri Jawaharlal Nehru, Prime Minister, Dr. H. C. Mukherjee, Governor of West Bengal, Dr. B. C. Roy, Chief Minister of West Bengal and the Hon'ble Sri S. N. Banerjee, Vice-Chancellor of the Calcutta University were among the many distinguished guests present at the inaugural Session; they addressed the scientists present. The President Dr. J. N. Mukherjee delivered his Presidential address at the inaugural session.

3. As in the past, the Congress was well attended. A number of scientists from Burma, Denmark, France, Germany, Hungary, Japan, the Netherlands, Norway, Russia, Switzerland, Turkey, the United Kingdom and the United States of America participated in the deliberations of the Congress. The Universities, the Learned Societies and the Central and State Governments as before also sent delegates to the Congress.

4. Excellent arrangements were made in every respect by the Local Committee and the Association records their appreciation and indebtedness to the authorities of the Calcutta University and the officers of the Local Committee.

OBITUARY

5. The Committee records with regret the death of Dr. M. B. Soparkar a past President of the Medical Section, and Prof. Pars Ram, a past president of the Section of Psychology and Educational Sciences.

THE GENERAL COMMITTEE MEETING

6. The General Committee met on the 6th January, 1952 under the Chairmanship of the President, Dr. J. N. Mukherjee, and considered amongst other matters the New Rules of the Association as submitted by the Council. The New Rules as adopted by the General Committee now come into force. Dr. D. M. Bose was announced to be the President for the 1953 Session. Prof. P. C. Mahalanobis was appointed as the Treasurer and Dr. B. N. Prasad and Dr. S. R. Sen Gupta General Secretaries. The invitation of the University of Lucknow to hold the fortieth session was accepted.

COUNCIL MEETING

7. The Council met on the 2nd and the 6th January under the Chairmanship of the President, Dr. J. N. Mukherjee, and finalised the new rules of the Association for submission to the General Committee.

SUB-COMMITTEE ON SCIENCE AND SOCIAL RELATIONS

8. The annual meeting of the Sub-Committee was held on the 2nd January, 1952 under the Chairmanship of the President, Dr. J. N. Mukherjee. The meeting was followed by a lecture from Dr. B. C. Guha on "Water in the service of man". The credit for the successful working of this Sub-Committee goes to Prof. J. M. Sen, the Convener. It should be recorded here that from 1952 the Sub-Committee will be designated as "the Committee on Science and Social Relations" and it will have an enlarged membership comprising the President, the Treasurer, the two General Secretaries, the thirteen Sectional Presidents, and twenty-eight members. Prof. J. M. Sen has kindly agreed to continue as Convener.

MEMBERSHIP OF THE ASSOCIATION

9. That the Science Congress is steadily gaining in popularity amongst the scientists may be seen from the following tabular statement:

	38th Session	39th Session	40th Session
Honorary members	7	7	7
Life Members	48	62	73
Ordinary Members	1256	1613	1650
Full Sessional Members:			
Enrolled at Headquarters	612	601	550
Enrolled at Local Secy's. Office	287	408	
Associate Members :			
Enrolled at Headquarters	125	294	236 (upto 5th December)
Enrolled at Local Secy's. Office	358	351	
Student Members:			
Enrolled at Headquarters	182	635	252 (upto 5th December)
Enrolled at Local Secy's. Office	711	1187	

OFFICE BEARERS, 1953.

10. In accordance with the New Rules, the President, Dr. D. M. Bose, took over charge of the office on the 1st February, 1952. Prof. P. C. Mahalanobis, the Treasurer and Dr. B. N. Prasad and Dr. S. R. Sen Gupta, the General Secretaries took over charge of their respective offices at the same time. Appreciation of the unstinted service rendered by the Executive Committee and particularly by Dr. B. Mukherji is recorded. In recognition of his valuable service to the Indian Science Congress Association, the Asiatic Society has awarded to Dr. B. Mukerji the Indian Science Congress medal.

FINANCIAL POSITION OF THE ASSOCIATION

11. The Government of India in the Ministry of Natural Resources and Scientific Research have continued to support the activities of the Association by making generous grants both for meeting the expenses of the Association and that on foreign scientists invited to attend the Science Congress Session. The Government have found it possible to increase the general grant for the year 1952-53 to a sum of Rs. 22,000/-. In the tabular statement below is given a statement of grants received by the Association during the last four years.

1. 1st April, 1949 to 31st March, 1950 .. Rs. 15,000/-
2. 1st April, 1950 to 31st March, 1951 .. Rs. 12,000/-
3. 1st April, 1951 to 31st March, 1952 .. Rs. 10,000/-
4. 1st April, 1952 to 31st March, 1953 .. Rs. 22,000/-
   (Received by 1st instalment—Rs. 8,000/-)

12. A tabular statement of receipts and expenditure, is given below:

	Receipt	Expenditure	Savings	Deficit
	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.
1. 1st December '49 to 30th November '50 (12 months) ..	42,946- 5- 9	34,655- 4- 6	8,291-1-3	
2. 1st December '50 to 31st March '51 (4 months) ..	12,269-11- 6	13,260-14-11		991- 3-5
3. 1st April '51 to 31st March '52 (12 months) ..	49,693- 1- 9	51,237-15-11		1,541-14-2

4. 1st April '52 to 30th November '52:

As per Cash Book.

Receipts.	*Payments.*
Rs. 48,188-12-3	Rs. 38,806-14-6

It may be observed that for the last two years owing to heavy expenditure on printing the Association has not been able to meet the entire expenditure from income not withstanding the generous assistance received from the Government of India. The Association entertains the hope that the Government of India will soon be able to make to the Association a black grant of Rs. 35,000/- and thus help to stabilise the financial position of the Association.

PRINTING COSTS

13. The cost of publication has steadily increased, primarily due to increase in cost of printing and paper, but no less due to increase in the volume of publication. The estimated expenditure is nearly Rs. 30,000/- which constitutes about 75% of the income from the membership dues and about 60% of the total income.

MEMBERSHIP FEE

14. It will be recalled that the Executive Committee recommended that the membership fee of the Association be as follows:

Ordinary member	Rs. 15/-
Full Sessional	Rs. 20/-
Associate Sessional	Rs. 10/-
Student Sessional	Rs. 5/-

It was also recommended that any Ordinary member failing to maintain his ordinary membership for any year should have to pay an admission fee of Rs. 10.

15. The General Committee at its last meeting decided that for the time being the membership fee should continue to remain as before. However, the Executive Committee feels that without increase in the

membership fee it will not be possible for the Association to balance its budget unless the expenditure on publication is substantially reduced by severly curtailing the size of the Association's publication.

16. It will be recalled that under the new rules on compounding fee for life membership "any person who has been continuously an ordinary member for ten years or more shall be allowed a reduction in the compounding fee of Rs. 5/- every year of such membership".

17. The Executive Committee had not recommended fixation of any limit to the rebate. Decision on this question was not taken at the last meeting of the General Committee.

BUILDING FUND

18. A sum of Rs. 12,995-7-0 has been used to purchase securities, the face value of which is Rs. 15,900/- earmarked as the building fund. The Local Authorities organising the 39th Session of the Indian Science Congress Association have also donated a sum of Rs. 2,439-7-9 towards the bulding fund of the Association. The Association gratefully acknowledges this gift and hopes that similar contributions will be forthcoming in the coming years.

CO-OPERATION WITH OTHER ORGANISATIONS IN INDIA AND ABROAD
INVITATION TO FOREIGN SCIENTISTS

19. As in the past, suggestions were invited from the members of the Council. On the basis of these suggestions the Executive Committee made its recommendations which were considered by the Standing Committtee comprising—

(1) Sri Jawaharlal Nehru, Chairman
(2) Dr. S. S. Bhatnagar
(3) Prof. P. C. Mahalanobis
(4) The President (Dr. D. M. Bose)
(5) Dr. H. Bhabha
(6) Dr. J. N. Mukherjee } (by invitation)
(7) Mr. T. Gonsalves }
(8) The Headquarters General Secretary (Dr. S. R. Sen Gupta)

Invitations have been extended jointly by the Government of India and the Indian Science Congress Association according to the decision made by the Standing Committee.

20. The Government of India have very kindly provided this year a grant of Rs. 53,000/- for the purpose of the continuation of this most welcome scheme for the promotion of contacts between Indian and foreign scientists.

NATIONAL COMMITTEES (PAN INDIAN OCEAN SCIENCE ASSOCIATION)

21. At the instance of the Government of India and in accordance with the decision of the Pan Indian Ocean Science Congress, seven National Committees have been formed as below:

1. Physical Sciences	..	Dr. S. S. Bhatnagar
		Dr. A. K. Das
		Dr. J. C. Ghosh
		Dr. D. S. Kothari
		Prof. S. K. Mitra (Convener)
		Dr. K. R. Ramanathan

2. Biological Sciences	..	Dr. K. N. Bahl Prof. Y. Bharadwaja Dr. K. P. Biswas Dr. S. L. Hora (Convener) Dr. C. G. Pandit Dr. A. C. Ukil
3. Geological Sciences	..	Dr. J. B. Auden Dr. P. K. Ghosh Dr. M. S. Krishnan (Convener) Dr. C. Mahadevan Dr. B. Rama Rao Dr. D. N. Wadia
4. Agricultural sciences	..	Dr. R. J. Kalamkar Prof. Jai Chand Luthra Dr. J. N. Mukherjee (Convener) Dr. B. Pal Sri K. Ramiah Mr. Ranganathan
5. Economics, Education, Social Sciences	..	Dr. S. P. Agharkar Dr. Zahir Hussain Dr. J. M. Kumarappa Dr. V. K. R. V. Rao Mr. K. G. Saydiain Prof. J. M. Sen (Convener)
6. Geography & Oceonography		Dr. S. K. Banerjee Dr. S. P. Chatterjee Prof. H. L. Chibber Dr. B. L. Gulatee Dr. N. K. Panikkar (Convener) Dr. S. B. Sethna
7. Human Ecology	..	Prof. Nirmal Kumar Bose Mr. S. K. Bose Prof. K. P. Chattopadhyay Dr. Verrier Elwin Prof. P. C. Mahalanobis (Convener)

22. The President of the Association is the ex-officio representative of the Association on the Council of the Pan Indian Ocean Science Association.

23. The President of the Indian Science Congress Association will also be the alternate delegate to represent India on the Pan Indian Ocean Science Association.

INDIAN NATIONAL COMMISSION FOR CO-OPERATION WITH UNESCO

24. The Government of India has recently revised the constitution of the Indian National Commission. Under the revised constitution Learned Societies will be entitled to Associate Membership i.e., membership without voting rights, and the Indian Science Congress Association will have one seat.

NATIONAL INSTITUTE OF SCIENCES

25. Dr. D. M. Bose, the President and Dr. B. N. Prasad. the Outstation General Secretary have been appointed as representatives of the Indian Science Congress Association to serve on the Council of the National Institute of Sciences as additional Vice-President and additional member respectively for the year 1953.

INDIAN COUNCIL OF MEDICAL RESEARCH

26. Dr. J. N. Mukherjee has been appointed as the representative of the Association on the Governing Body of the Indian Council of Medical Research.

CEYLON SCIENCE ASSOCIATION

27. Dr. B. Sundara Raj represented the Indian Science Congress Association to the Eighth Annual Session of the Ceylon Science Association.

AUSTRALIAN & NEW ZEALAND ASSOCIATION

28. Dr. Harinarain and Dr. K. S. Krishnan represented the Indian Science Congress Association to the meeting of the Australia and New Zealand Association for the Advancement of Science.

BRITISH ASSOCIATION

29. Col. C. L. Pasricha and Dr. S. R. Sen Gupta, (Headquarters General Secretary) represented the Indian Science Congress Association at the British Association meeting.

UNESCO

30. The General Secretary, Headquarters, has continued to act as the Liason Officer on International Relations and to correspond on behalf of the Association with UNESCO.

MEETINGS OF THE EXECUTIVE COMMITTEE

31. The Executive Committee held five meetings including two statutory meetings and one emergency meeting. Of the two statutory meetings one was held at the headquarters i.e., at Calcutta and the other at Delhi. The third statutory meeting will be held on the 1st January, 1953 at Lucknow.

FINANCE COMMITTEE

32. Dr. D. Chakravarti was appointed a member of the Finance Committee which shall consist of the General Secretaries, the Treasurer and one Ordinary or Honorary Member resident in Calcutta who shall be nominated by the Executive Committee.

OFFICIATING ARRANGEMENTS

33. Dr. S. L. Hora very kindly acted as the Treasurer for three weeks during the absence from India of Prof. P. C. Mahalanobis. The Committee records its thanks to Dr. Hora.

34. Dr. S. R. Sen Gupta, Headquarters General Secretary, was deputed to England to represent the Indian Science Congress Association at the British Association meeting and he was granted leave for two months. During his absence for a little over two and a half months, Dr. D. Chakravarti rendered unstinted service as acting General Secretary for which the Committee is grateful.

35. The responsibility for the work of the Association continues to be shared jointly by the two General Secretaries. For administrative convenience the Outstation General Secretary is mainly responsible for the scientific side of the work and for the preliminary arrangement and the programme of the Annual Session whereas the Headquarters Secretary is concerned with routine and administrative duties and for publications.

ASSISTANT SECRETARY

36. A part-time Assistant Secretary has been appointed for eight months. The work of the Association has now increased so much that it is now imperative to appoint a paid Assistant Secretary as in the past which a post had to be held in abeyance on account of financial difficulties.

REORGANISATION OF THE OFFICE

37. The Executive Committee felt the need for reorganisation of the office and accordingly appointed an ad-hoc sub-committee consisting of

The President
Dr. D. Chakravarti
Dr. U. P. Basu
Mr. B. K. Sarkar,
The Treasurer, and
The General Secretaries.

The Committee met and made certain recommendations which have been examined and approved by the Executive Committee but could not be given effect to owing to shortage of funds.

38. The financial side of the contemplated re-organisation may be summed up as follows:

(*a*) The office staff will consist of

Assistant Secretary ..	Rs. 400-20-600	
General Assistant ..	Rs. 80-10-220	
Stenographer	Rs. 100- 5-200	(New post)
Accountant-cum-Cashier ..	Rs. 90- 5-130	(New post)
Clerk-typist	Rs. 50- 5-130	
Despatcher-cum-Diary Clerk ..	Rs. 55- 5-130	
Literate bearer Peon ..	Rs. 20- 1- 35	
Peon	Rs. 15- 1- 30	

(*b*) The staff should be entitled to dearness and other allowances as admissible under the Government of the State in which the Headquarters is situated.

(*c*) The Outstation General Secretary should be provided with a sum of Rs. 50/- per month for payment of honorarium to part-time clerical and other staff.

(*d*) The staff should receive the benefit of a Provident Fund.

(*e*) The income from the life membership fee should be credited to the reserve fund.

(*f*) Ten percent of the annual income from the ordinary membership dues should be credited to the building fund.

Because of inadequacy of funds it has not been possible to implement in full any of the above recommendations except (c).

BUDGET

39. The budget estimates for the year 1952-53 and for the year

1953-54 and also the audited statement of accounts for the year 1951-52 will be seen in the Appendix.

INSTRUCTION SHEETS TO AUTHORS

40. The instruction sheets for the guidance of authors of papers for communication to the Indian Science Congress were printed and sent to the Sectional Presidents.

NEW SECTIONS

41. During the year the Executive Committee received requests to open a separate Section on History of Science and Social Relations, two Separate sections for Geology and Geography, a separate section for Yogic Science, and a separate section for Technology.

42. Till the financial position of the Association has improved considerably and the office is considerably strengthened the opening of new sections will not be possible.

ARRANGEMENTS FOR PROOF READING

43. Now that the offices of the Sectional Correspondents have been abolished it has been found difficult to arrange for proof reading. Thanks to the assistance and co-operation of some of the members it has some how been possible to manage the work of proof reading.

SUB-COMMITTEES

Publications

44. A Sub-Committee has been appointed consisting of the following:

President,
Dr. S. L. Hora
Dr. D. Chakravarti
Prof. P. C. Mahalanobis, and
Two General Secretaries

to consider the question of improving the standard of the proceedings and to suggest steps for consideration of the Executive Committee. The Sub-Committee has not yet reported.

TEACHING OF SCIENCE

45. The views of the members were invited on the desirability of holding symposiums on the teaching of science. A Sub-Committee consisting of—

Prof. P. C. Mahalanobis
Dr. S. L. Hora
Dr. A. C. Ukil

has been formed to study the replies and submit their recommendation. The Sub-Committee is due to report shortly.

DIFFUSION OF SCIENTIFIC KNOWLEDGE

46. A Sub-Committee consisting of—

Dr. A. C. Ukil
Dr. S. L. Hora
Prof. P. C. Mahalanobis (Convener)

has been formed to formulate a scheme to give effect to suggestions of Prof. P. C. Mahalanobis for the diffusion of scientific knowledge amongst the general public. The Sub-Committee's recommendation is awaited.

ENCOURAGEMENT TO YOUNGER SCIENTISTS

47. Suggestions were invited from the members of the General Committee as to the steps that should be taken to encourage the younger scientists. The replies received from the members are now being studied by a Sub-Committee consisting of—

President
Dr. S. L. Hora
Dr. D. Chakravarti
Prof. P. C. Mahalanobis, and
Two General Secretaries.

ACKNOWLEDGEMENT

48. The Association is deeply indebted to the Government of India and especially to Dr. S. S. Bhatnagar, the Secretary of the Ministry of Natural Resources and Scientific Research. Without financial assistance from the Government of India it would not have been possible to meet to a large extent the excess of the expenditure over the income.

49. As in the past the officers of the Ministry of Natural Resources and Scientific Research, Government of India, have rendered unstinted co-operation, assistance and service in organising the programme of and making travel arrangements for the distinguished foreign visitors. The Committee is grateful to the Government of India and in particular to Mr. T. Gonsalves of the Ministry of Natural Resources and Scientific Research.

50. The Committee records with appreciation the faithfull services rendered by the office staff and the part-time services of the staff of Dr. B. N. Prasad and Dr. S. R. Sen Gupta.

B. N. PRASAD,
S. R. SEN GUPTA,
General Secretaries,
on behalf of the Executive Committee of
the Indian Science Congress Association.

The 19th December, 1952.

MEETING OF THE COMMITTEE

GENERAL COMMITTEE

A meeting of the General Committee of the Indian Science Congress Association was held on the 6th January, 1953, at 2 P.M. in the A. P. Sen Hall, Lucknow University, Lucknow, with the General President, Dr. D. M. Bose in the Chair.

The following members were present:—

Dr. D. M. Bose (President), Messrs. N. Adhikari, R. G. Mukherji, S. C. Sinha, P. K. Basu, S. K. Basu, D. Panja, N. K. Panikkar, A. P. Bhattacharya, M. M. Bhatt, K. R. Nair, S. K. Majumdar, J. C. Saha, R. M. Lomba, L. J. Bhatt, Suresh Sethna, N. N. Ghosh, S. K. Basu, R. N. Sen, M. C. Chaki, S. Swaroop, S. P. Agharkar, S. Basu, S. Datta, F. C. Auluck, H. Gupta, G. P. Dube, B. N. Srivastava, G. C. Esh, S. R. Maitra, D. N. Mullick, S. N. Shukla, H. N. Mukerjee, D. V. Karmakar, Rajnarain, A. K. P. Sinha, N. L. Sharma, R. C. Misra J. N. Mukherjee, N. Murty, L. N. Srivastava, M. K. Mukherjee, S. Basu, S. M. Dasgupta, Mridula Dutt, A. B. Kar, S. C. Dutt, S. P. Roy Choudhury, S. S. Sokhey, S. L. Hora, B. Mukerji, P. K. Bose, M. N. Bose, C. S. Pandey, A. K. Bose, Swami Pronovananda, M. R. Choudhury, S. C. Bose, K. N. Mukherjee, D. S. Dattar, H. L. Srivastava, H. N. Dasgupta, M. M. Saha, Nobinchandra Bole, Sivotosh Mukerjee, H. C. Rahaja, Ramgopal, Sri Rama Sinha, K. P. Srivastava, Ram Udar, P. N. Sharma, Baldeo Singh, G. K. Manna, P. N. Nandy, P. N. Kackar, S. K. Bose, C. Barai, S. K. Sen, M. L. Roonool, A. G. Jhingram, N. G. Magar, G. V. Jadhav, C. C. Shah, A. R. Chauan, D. D. Karve, R. Mukherjee, Abha Mitra, S. K. Agarwal, A. P. Kapur, D. M. Panwani, S. R. Das, D. Sen, T. N. Ghosh, K. A. Raja, D. C. Sen Gupta, K. Govinda Rao, J. L. Goirl, J. K. Pande, D. D. Gupta, G. N. Mitra, B. B. Joshi, N. R. Tawde, G. G. Majumdar, N. K. Ray, Hargobind Prasad, S. C. Chakravarty, B. Banerjee, H. K. Nandi, G. Bandyopadhyay, (Mrs) Susama Bandyopadhyay, K. Nath, Y. Bharadwaja, J. M. Sen. Dr. S. R. Sen Gupta, & Dr. B. N. Prasad, (General Secretaries).

(1) The minutes of the Meeting of the General Committee held on the 6th January, 1953, (already circulated), were confirmed.

(2) Dr. D. M. Bose, General President, announced that the Executive Committee had recommended the election of Dr. S. L. Hora, Calcutta, as General President for the 1954 Session and that of Dr. S. K. Mitra, Calcutta, for the 1955 Session. The proposal was confirmed by acclamations.

3. *Announcement of the names of the Members of the Executive and the Council*:—Dr. B. N. Prasad, General Secretary, reported the following results of the election of the Members of the Executive Committee and the Council for the year 1953-54.

Executive Committee: Sri B. B. Joshi, Baroda, Dr. H. J. Bhabha, Bombay, Sri B. K. Sarkar, Calcutta, Dr. U. P. Basu, Calcutta, Sri K. L. De, Calcutta, Dr. D. S. Kothari, New Delhi, Dr. B. Mukerji, Lucknow, Sri N. Adhikari, Calcutta, Dr. Mata Prasad, Bombay, Dr. D. Chakravarti, Calcutta.

Council: Dr. B. C. Kundu, Barrackpore, Dr. C. R. Barat, Calcutta, Dr. J. P. Choudhuri, Calcutta, Dr. K. N. Bahl, Patna, Dr. T. N. Ghosh, Calcutta, Dr. S. K. Pramanik, Poona, Prof. C. Mahadevan, Waltair.

4. *Announcement of the names of the Sectional Presidents and Recorders for the Session 1954*:—Dr. B. N. Prasad, General Secretary, announced the names of Sectional Presidents and Recorders for 1954 as follows:—

Sections.	Presidents.	Recorders.
Mathematics.	Dr. S. K. Chakravarty, Calcutta.	Dr. Brij Mohan, Benaras.
Statistics.	Dr. K. R. Nair, Dehradun.	Mr. H. K. Nandi, Calcutta.
Physics.	Dr. P. S. Gill, Aligarh.	Dr. B. N. Srivastava, Lucknow.
Chemistry.	Dr. V. Subrahmanyan, Mysore.	Dr. T. N. Ghosh, Calcutta.
Geology & Geography.	Dr. H. L. Chibber, Benares.	Dr. A. G. Jhingran, Calcutta.
Botany.	Dr. S. N. Das Gupta, Lucknow.	Dr. J. Venkateswarlu, Waltair.
Zoology & Entomology.	Dr. D. V. Bahl, Bombay.	Prof. J. N. Rudra, Calcutta.
Anthropology & Archaeology.	Mr. Dharani Sen, Lucknow.	Mr. S. R. Das, Delhi.
Medical & Veterinary Sciences.	Dr. R. N. Chaudhury, Calcutta.	Dr. S. C. Seal, Calcutta.
Agricultural Sciences.	Dr. B. P. Pal, New Delhi.	Dr. D. Chatterjee, New Delhi.
Physiology.	Dr. P. B. Sen, Calcutta.	Dr. S. R. Maitra, Calcutta.
Psychology & Educational Science	Dr. Suhrid Sinha, Calcutta.	Dr. Awadh Krishna Prasad Sinha, Patna.
Engineering & Metallurgy.	Mr. H. N. Srivastava, Jabalpur.	Dr. M. Dutta, Calcutta.

5. *Announcement of the venue of the 1954 Session:* Dr. D. M. Bose, General President, announced that at the invitation of the Osmania University, Hyderabad-Deccan, it has been decided to hold the 41st Session of the Indian Science Congress at Hyderabad-Deccan in January, 1954.

6. *Election of two Members to each of the 13 Sectional Committees:*—In regard to the election of Members to the Sectional Committees, the General President, Dr. D. M. Bose, under Rule 17(b) (c) had given his decision on the 5th January, 1953, that for this year also, the procedure followed last year for the election of Ordinary Members to Sectional Committees be followed, i.e. (i) two Ordinary Members be elected to each section at the meeting of the General Committee to be held on 6th January, 1953; (ii) the election will be by show of hands.

The General Committee, in accordance with the decision of the General President, proceeded with the election of the Members to each of the 13 Sectional Committees. After the names were duly proposed and seconded, the following were elected by majority of votes:—

Sections.	Members elected.
Mathematics.	Dr. S. K. Basu, Calcutta. Dr. R. D. Misra, Lucknow.
Statistics.	Mrs. Chameli Bose, Calcutta. Dr. N. M. Bhatt, Baroda.

Physics.	Dr. P. N. Sharma, Lucknow. Dr. S. Basu, New Delhi.
Chemistry.	Dr. S. N. Shukla, Lucknow. Dr. S. K. Majumdar, Darjeeling.
Geology & Geography.	Prof. M. R. Chaudhuri, Calcutta. Prof. R. V. Sitholey, Lucknow.
Botany.	Dr. P. N. Nandi, Calcutta. Miss Mridula Datta, Calcutta.
Zoology & Entomology.	Dr. J. Dayal, Lucknow. Dr. Sivatosh Mookerjee, Calcutta.
Anthropology & Archaeology.	Prof. Dilip Kumar Sen, Lucknow. Dr. Susil K. Basu, Calcutta.
Medical & Veterinary Sciences.	Dr. P. Sen, Calcutta. Prof. Dharam Narain, Lucknow.
Agricultural Sciences.	Dr. Barada N. Chatterjee, Calcutta. Dr. C. C. Shah, Anand.
Physiology.	Dr. G. C. Esh, Calcutta. Dr. D. N. Mullick, Izatnagar.
Psychology & Educational Science.	Prof. K. Rai Chaudyuri, Aligarh. Dr. Miss Sidhanta, Lucknow.
Engineering & Metallurgy.	Dr. S. C. Roy, Chirimuri. Dr. H. N. Dasgupta, Dhanbad.

At this stage, Dr. D. M. Bose, the General President, requested Dr. S. L. Hora to take the Chair as he (Dr. Bose) had to go elsewhere to keep an important engagement as President of the Association.

7. *Consideration of the Annual Report of the Executive Committee the audited statement of accounts for the period 1st April, 1951 to 31st March 1952, and the budget estimates for the year 1952-53 and 1953-54:—*

Prof. S. P. Agharkar had earlier desired that copies of the Annual Report should be made available to members on the 2nd January every year, preferably along with other papers.

The General Committee adopted the Annual Report of the Executive Committee, the audited statement of accounts for the period 1st April, 1951 to 31st March 1952, and the budget estimates for the year 1952-53 and 1953-54 after a brief discussion.

8. *Consideration of any other business with the approval of the Chairman—*

(i) Dr. S. L. Hora explained the desirability of the revision of the Membership fees. The General Committee agreed that the proposals, as circulated previously (*vide* page 1 of the Draft Rules of the Rules Revision Sub-Committee), should be brought up next time for consideration of the General Committee according to the procedure laid down in the Rules of the Association.

(ii) Major-General S. S. Sokhey sought the permission of the Chairman to make some observations regarding the improvement of the working of the Association. Permission being granted, he detailed the various defects observed by him in the working of the Association and suggested certain measures for improvement. His observations were supported by Dr. H. Zaheer.

At this stage, a member observed that there was no quorum for the meeting and a count was taken. It was found that less than 51 members (the number required for a quorum) were present.

As some members present wished to continue the discussion, the Chairman observed that the Meeting could now discuss the matter informally. Thereafter Dr. D. V. Karmakar and Sardar Baldev Singh spoke supporting what had already been stated by Major-General Sokhey and Dr. Zaheer. Sardar Baldev Singh also referred to the question of Membership Fees and wanted them to be lowered rather than increased.

(iii) Votes of thanks to Dr. D. M. Bose, General President, Dr. S. R. Sen Gupta and Dr. B. N. Prasad, General Secretaries, Dr. P. C. Mahalanobis, Treasurer, the Chairman and Members of the Reception Committee, Local Secretaries, other office bearers and volunteers in appreciation of their efficient services were passed.

Approved.

D. M. Bose

President.

Sd/- B. N. Prasad.

General Secretary,

Indian Science Congress Association.

PROCEEDINGS OF THE MEETING OF THE COUNCIL OF THE INDIAN SCIENCE CONGRESS ASSOCIATION HELD ON FRIDAY THE 2ND JANUARY, 1953, AT 6 P.M. IN ROOM NO. 10 OF THE ZOOLOGY DEPARTMENT, LUCKNOW UNIVERSITY, LUCKNOW.

The following members were present:—Dr. S. P. Agharkar, Dr. R. K. Saksena, Dr. R. G. Mukherji, Prof. N. L. Sharma, Dr. C. R. Barat, Dr. T. N. Ghosh, Dr. U. P. Basu, Dr. B. Sanjiva Rao, Dr. S. L. Hora, Prof. J. M. Sen, Mr. K. L. De, Mr. B. K. Sarkar, Mr. B. B. Joshi, Mr. N. Adhikari, Dr. D. Chakravarti, Dr. N. D. Kehar, Dr. S. Dutta, Dr. J. N. Mukherji, Dr. S. R. Sen Gupta, Dr. B. N. Prasad.

In the absence of Dr. D. M. Bose, General President, Dr. S. P. Agharkar was voted to take the chair.

Item 1—Confirmation of the minutes of the meetings of the Council held on 2nd January, and 6th January, 1952.

Decision—Confirmed.

Item 2—Consideration of the Annual Report to be presented to the General Committee.

The Chairman pointed out at the outset, the desirability of circulating the Annual Report to members of the Council and the General Committee along with the final programme (if not earlier) in order that it may be studied and discussed properly. Putting the report in the hands of members at the meeting itself makes it difficult to offer comments or constructive suggestions. He suggested that, if necessary, the regulations on the subject may be suitably modified so as to permit this being done. Dr. Hora promised to look into the question.

There was a good deal of discussion on the adoption of the Annual Report in which a number of members, including the Chairman took part. After discussing the report, especially the paragraphs noted below, the report was ultimately adopted:—

(*a*) *Paragraph 14—Membership Fee:* After a considerable discussion regarding the financial aspects of the Association, a resolution for closure moved by Dr. S. L. Hora, was ultimately out.

(*b*) *Paragraph 24—Indian National Commission for Co-operation with Unesco:* About the representation in the Sub-Committee of the Indian National Commission for co-operation with UNESCO, Dr. S. R. Sen Gupta (Headquarters General Secretary) explained the position and said that previously the Indian Science Congress Association could nominate four members to the Sub-Committee, but, under the present constitution, the Indian Science Congress Association as such was offered no seat. Nevertheless, he said that the Central Government requested the Indian Science Congress Association to nominate an Associate Member as one of the five nominees whom they could nominate in the Sub-Committee under the present constitution. He further explained that the Associate Member could only participate in the deliberations but had no voting right. The following resolution was passed:—

"The Council recommends to the Executive Committee to pursue this matter further with the Government of India with a view to obtain adequate representation with voting rights on the Indian National Commission".

(*c*) *Paragraph 29—British Association:* Colonal C. L. Pasricha and one of the two General Secretaries, Dr. S. R. Sen Gupta, represented the Indian Science Congress Association at the British Association Meeting. In this connection, Dr. S. L. Hora

pointed out that Col. C. L. Pasricha was not an Ordinary Member and, under the Rules, he ought not have been sent to the British Association Meeting as a representative of the Indian Science Congress Association. There was a consensus of opinion that, in future, only Ordinary Members be sent to represent the Indian Science Congress Association at such meetings.

Item 3—Consideration of ways and means for improving the work of the Association.

Decision—The Council recommends to the Executive Committee to draw out a comprehensive plan for the improvement of the work of the Association and the plan should be circulated amongst the members of the Council to elicit their opinion.

Item 4—Any other business with the approval of the Chairman.

Dr. S. P. Agharkar explained the desirability of suggesting to members of the Sections that they might agree on their representatives on the Sectional Committees in order that the elections might not take long time at the General Committee Meeting.

With a vote of thanks to the Chair, the meeting terminated.

Approved.

S. P. Agharkar

President.

19.1.53.

Sd/- B. N. Prasad

General Secretary,

Indian Science Congress Association.

COMMITTEE ON SCIENCE AND ITS SOCIAL RELATIONS

PROCEEDINGS OF THE ANNUAL MEETING OF THE COMMITTEE ON SCIENCE AND ITS SOCIAL RELATIONS.

The Annual Meeting of the Committee was held at the Chemical Lecture Theatre of the University of Lucknow on the 4th January, 1953, at 2-30 P.M.

Members Present :

Dr. D. M. Bose (President),
Dr. S. P. Agharkar,
Dr. B. C. Guha,
Dr. J. N. Mukherji,
Dr. J. C. Ghosh,
Six Sectional Presidents of the Indian Science Congress, and
Prof. J. M. Sen (Convener).

About 200 members of the Indian Science Congress Association also attended the meeting.

1. The Annual Report for 1952 was read by the Convener and was adopted. (The report is given in the proceedings).

2. The Committee recommended to the Executive Committee that the Committee on Science and Its Social Relations for 1953, be constituted as follows:—

1 to 4.—President, two General Secretaries and Treasurer (*ex-officio*).
5 to 17.—Sectional Presidents of 13 Sections.

18. Dr. S. P. Agharkar (Poona).
19. Prof. S. N. Bose (Calcutta).
20. Mr. Nirmal K. Bose (Calcutta).
21. Dr. K. Chandrasekharan (Bombay).
22. Dr. U. P. Basu (Calcutta).
23. Dr. B. C. Guha (Calcutta).
24. Dr. J. C. Ghosh (Kharagpur).
25. Prof. D. D. Kanga (Madras).
26. Mrs. I. Karve (Poona).
27. Dr. J. N. Mukherji (Calcutta).
28. Dr. B. Mukherji (Lucknow).
29. Mr. K. Ray Chowdhuri (Aligarh).
30. Dr. R. B. Lal (Calcutta).
31. Dr. A. Rahman (Hyderabad).
32. Dr. Miss R. Siddhanta (Lucknow).
33. Dr. Indra Sen (Pondichery).
34. Prof. M. N. Saha (Calcutta).
35. Dr. P. G. Shah (Bombay).
36. Dr. J. N. Ray (Bombay).
37. Dr. Subrahmaniam (Mysore).
38. Dr. N. V. Subba Rao (Hyderabad).
39. Prof. M. S. Thacker (Bangalore).
40. Dr. A. C. Ukil (Calcutta).
41. Dr. D. N. Wadia (Delhi).
42. Prof. J. M. Sen (Calcutta).

—*Convener.*

3. Resolved that the Committee continue to make a study of the problems relating to the right to participate in the cultural life of a country from the stand point of science as mentioned in the Annual Report of 1952.

4. Mr. P. G. Shah (President, Anthropological Society of Bombay and President of the Gujrat Research Society) read a short paper on

"Determination of Human Norms", and there was a discussion on some of the points raised in his paper. The matter being controversial he suggested the appointment of a special Committee to study the points. But this was not agreed to. He then suggested that the Committee on Science and Its Social Relations should study the points raised in his paper.

5. Resolved that as regards Mr. P. G. Shah's paper on "Determination of Human Norms" he may be requested to formulate certain questions which can be issued along with the questionnaire which the Convener proposed to issue to the various organisations for ascertaining the views mentioned in the Annual Report for 1952.

6. Mr. W. R. New, Electrical Engineer, Tennessee Valley Authority, then gave a lecture on Utilization of Electric Energy on the T.V.A. System. A leaflet giving the summary of his lecture was distributed to the members of the Science Congress present at the meeting and at the end of Mr. New's lecture there was a lively discussion on a similar project in India, *viz.,* the production of energy by the Damodar Valley Corporation. The President (Dr. D. M. Bose), Dr. J. C. Ghosh, Dr. J. N. Mukherji, Dr. U. P. Basu and a few engineer members took part in the discussion. Mr. New's lecture is appended at the end of the proceedings as desired by the members present at the meeting.

7. The meeting concluded with a vote of thanks to the lecturers and participants in the discussions on the two subjects. The Convener announced that Mr. Shah's paper and the lecture by Mr. New would be published in the Proceedings of the Indian Science Congress (Part I) for the session 1953. The Convener also thanked those who co-operated with him in making the meeting a success.

Lucknow :
4th January, 1953.

J. M. SEN,
—Convener.

ANNUAL REPORT OF THE COMMITTEE ON SCIENCE AND ITS SOCIAL RELATIONS FOR THE YEAR 1952.

The last Annual Meeting of the Committee was held at Calcutta at the Baker Laboratory Building, Presidency College, on the 2nd January, 1952 at 12 noon. 16 members of the Committee were present. The proceedings of the meeting as well as a summary of the lecture on *Water in the Service of Man* by Dr. B. C. Guha delivered at the end of the meeting of the Committee, were published in the Proceedings of the Indian Science Congress, Part I (pp. 45-50). It was mentioned in the report for 1951 that certain questions in regard to the method of teaching Science in High Schools in India were investigated. As a result of the interest aroused in the discussion which took place at the meeting of the Committee the General Secretaries of the Indian Science Congress Association sent out a circular for organising a symposium on the teaching of Science under the auspices of the Indian Science Congress. Possibly on a suitable date in the near future such a symposium will be held.

During the year 1952 mainly at the suggestion of the UNESCO a study of the right to participate in the cultural life of a country from the standpoint of science was made. It was realised that the public should share in scientific advancements by taking part in—(i) the spread of Scientific knowledge, (ii) Science as a hobby, (iii) the Social implications of Science. It was also realised that the freedom for participation would depend on the following:—(a) the application to individuals of the principle of non-discrimination, (b) constructive measures open to communities for promoting equality of opportunity in life, (c) consideration for the cultural rights of certain groups, (d) the psychological conditions on which freedom to participate in cultural life depends.

Leaving aside the importance of scientific advancement as a means to improving material living conditions, it would seem advisable to state briefly what constitutes the value of science as an element in culture, with particular reference to an understanding of the world and man himself by all men and women; to the discipline of the mind, to the effort to eradicate prejudices (particularly those which endanger human rights), and to mutual understanding. Efforts might be made to specify which sciences are most suitable for popular treatment, either because of their appeal or because they are relatively easy to understand. A great variety of agencies help to spread scientific knowledge among the general public: universities, schools, academies and public institutions, commercial publishing firms, the Press, Broadcasting, the Cinemas, Museums, Libraries, Science Clubs, etc. General consideration should be given to the possible methods of solving the problems arising out of the fact that certain forms of scientific knowledge are highly technical; the difficulty of reconciling the scientific spirit, in the proper sense, with Science's Appeal to the popular imagination; the pace of current developments in science; and the importance of instilling a more thorough knowledge and understanding of science by means of discussion.

Regarding science as a hobby—the first question of all to be considered, in relation to the present state of scientific knowledge in India is:—

> In what ways can the non-specialist take an active part in scientific advancement (experiments, observation of nature, sociological observations, etc)?
>
> How may active participation of this sort profit the individual and science?
>
> How can it be encouraged and promoted?

In this connection consideration might be given to the question of how far certain callings or pastimes are conducive to the individuals participation in given forms of scientific activity.

Regarding the social implications of science, the best means of helping the general public to appreciate the social implications of science and the relationship between science and society might be described. Attention might be drawn to the responsibilities undertaken by official, local, national and inter-national organizations, private associations and scientists themselves with the object of enabling all to have a share in scientific

advancement. The extent of State intervention in the various regions of India might be considered. Lastly, an attempt might be made to define the knowledge that these various agencies might be called upon to play and, in particular, the measures which might be recommended to the State.

As a result of the consideration of the above aspects of the problem it is desirable that the Committee on Science and its Social Relations of the Indian Science Congress Association should send out questionnaire to the various Scientific organisations and institutions teaching science. When their replies are received they should be collated and presented to the Executive Committee of the Indian Science Congress Association for taking further action in the matter.

J. M. SEN
Convener
Committee on Science and its Social Relations.

EXTRACTS FROM THE PROCEEDINGS OF THE MEETING OF THE EXECUTIVE COMMITTEE OF THE INDIAN SCIENCE CONGRESS ASSOCIATION HELD AT LUCKNOW ON THE 6TH JANUARY, 1953.

Item 3—Report of the Committee on Science and its Social Relations.

Resolved that the report be adopted and published in Part I of the Proceedings of the Indian Science Congress, and that the Committee for 1953, be constituted as recommended by the outgoing committee for 1952.

SUMMARY OF A LECTURE ON

UTILIZATION OF ELECTRIC ENERGY ON THE TVA SYSTEM

By

W. R. New, Electrical Engineer, Tennessee Valley Authority

I am glad to have this opportunity to discuss with you an important phase of the TVA program. I feel I have grown up with the TVA since I have worked with it 18 of the nearly 20 years of its existence. As a producer of power it certainly has grown—I guess you might say I have just grown older.

Before we examine the TVA system a comparison between it and your country of India will help us get an idea of size. The Tennessee River and its tributaries are shown in Figure 1. The system of dams which control that River are indicated on the map. The drainage area of the Tennessee is 3 percent of the area of India. TVA power provides electric power in a larger area of 80,000 square miles which is approximately 6 percent of the size of India.

In this area, approximately one-fifteenth of the size of your country, is installed generating capacity twice the total of India, and last year three times as many kwh were generated.

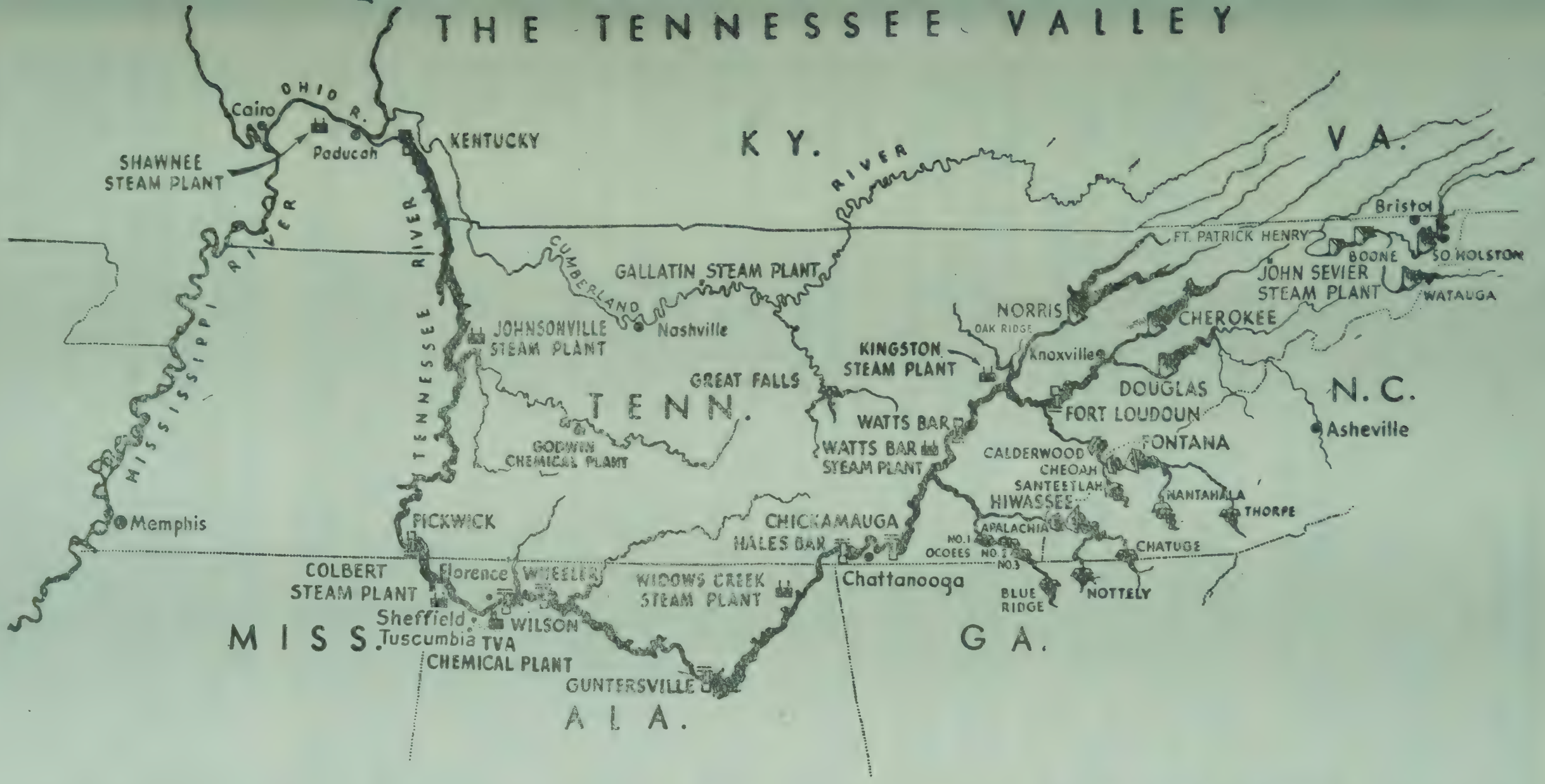
The use of electric power is an important measure of the growth of a region. Let us look for a few minutes at how the power is generated and what use is made of it in the TVA area.

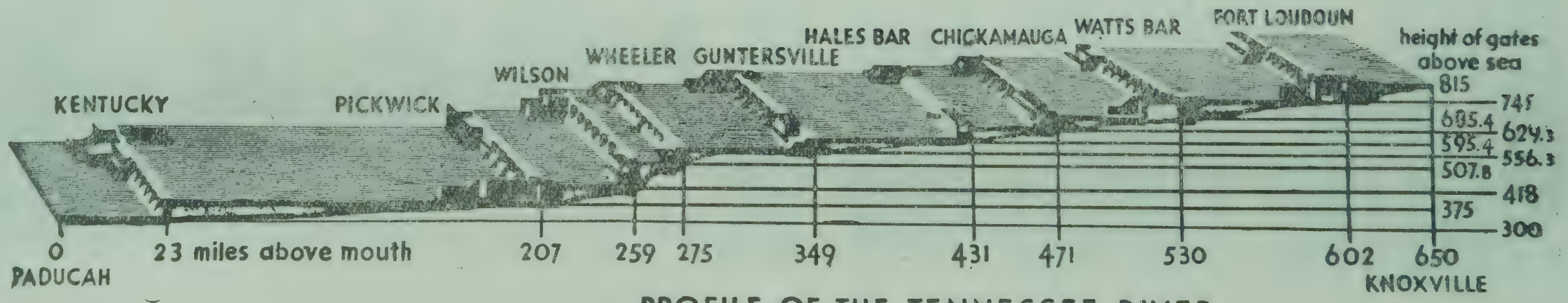
TVA started as a hydro system. As long as you have available hydro sites and can keep your dam construction program ahead of your power requirements, such as system will meet your power needs. However. hydro power is only available when there is water; and rainfall in the Tennessee Valley, as in India, is somewhat seasonal. Steam plants are valuable to supplement hydro power. Although there is rain throughout the year in the TVA area. the runoff is substantial in just about four months. Firm or continuous power is available only to the extent that water can be released throughout the year at a uniform rate.

The series of 30 dams on the Tennessee River and its tributaries turn the flow of the river on and off like a series of valves. In several instances water is used to generate power at 12 successive dams.

Power is not the only benefit which results from the control of the water in the Tennessee. The dams are operated first to control floods. While the rainfall is much better distributed during the year in the Tennessee Valley, floods have been very destructive in the past. A study of the fainfall and river flow records shows that these floods occur from January through April. The reservoirs are always drawn down to a minimum level at the beginning of the rainy season and are only filled when the likelihood of a flood decreases. The water is released from storage reservoirs on the tributary streams as the natural flow of the main river decreases during the summer and fall.

THE TENNESSEE VALLEY





PROFILE OF THE TENNESSEE RIVER

MAP BY GRAPHIC SERVICE - TVA

Each of the dams on the Tennessee River, the 650 miles from the Ohio River to Knoxville, is provided with locks. The profile of the Tennessee is shown at the bottom of Figure I. The series of dams provide slack water for the length of the Tennessee River. The Tennessee River is formed at Knoxville by the junction of the French Broad and Holston Rivers. This navigation channel last year carried 25 times as much freight as was carried prior to 1933. The articles carried now include automobiles, petroleum products, coal, steel, and machinery. Formerly, freight carried was largely sand and gravel.

When the need for more power became pressing in 1941, TVA constructed its first steam plant. As the need for power continued at an increasing rate after the end of the war and as good hydro sites became more scarce, TVA turned to steam to supply most of the increased power load. At the present time the TVA system consists of 3,500,000 kw of hydro and 1,000.000 kw of steam capacity. There are under construction 7 steam plants which will have an installed capacity of 5,000,000 kw.

The growth in the use of power has made this enormous expansion necessary. Only the exact amount of power needed at any instant can be generated; power however can be stored as water behind dams. This storage-ability gives great flexibility of operation to the hydro system.

The principles under which TVA sells power are set out in the Act which established the TVA. The following quotations from the Act show how this power was to be made available to the people of the region:

> "The board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth; and to carry out said authority, the board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the board it shall give preference to States, countries, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit but primarily for the purpose of supplying electricity to its own citizens or members.* * * This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose."

TVA does not itself retail except to a small group of very large industrial consumers and Federal Agencies, such as the Atomic Energy Commission. The retail job is done by 96 municipalties and 50 electric cooperatives who are preference customers of TVA. TVA sells power to these distributors under a standard contract which includes a uniform wholesale rate and prescribed retail rates. These retail rates are lowered as the distribution systems become successful and are able to pay off a major portion of the debt incurred for the acquisition or construction of the system. The power contract definitely specifies all proceeds from the sale of power must be used solely for the benefit of the electric consumers after operating expenses, debt service and a fair tax equivalent are paid.

The success of these electric distributing systems may be measured by the fact that onethird of them have reduced rates even during the inflationary period of the last 10 years.

The use of power in the Tennessee Valley in 1933 and 1952, is compared to that of the total U. S. in the following tabulation:

Approximate Growth of Power Market in Present TVA Area and in the U. S. 1933-52.

	TVA Area			United States		
	1933	1952	Increase	1933	1952	Increase
Number of Residential Customers	225,000	1,121,000	398%	20,014,392	42,000,000	110%
Avg. Residential use—KWH per Annum	600	4,106	584%	600	2,169	262%
Avg. Residential Rate—Cents per KWH	5.7	1.33	(77%)	5.5	2.77	(50%)
Generating Capacity—KW	814,500	4,526,885	456%	36,242,916	82,117,283	127%
Production Thousands of KWH	1,500,000	21,033,651	1302%	84,736,229	398,900,000	371%

( ) Denotes decrease

Last year almost one-half of TVA power was sold under the standard contract to municipalities and cooperatives. This power was resold to one and a quarter million electric consumers. Residential consumers used approximately one-half of this power and the other half was used by commercial and industrial consumers served by municipalties and cooperatives.

TVA, as set out in the Act, has a definite obligation to the residential consumers. This residential consumer in the TVA area is using twice as much power as the average consumer in the United States and paying for this power at a rate which is only 50 percent of the national average. Half of the residential consumers are concentrated in cities and communities having a population of over 250 and the other half are considered rural. The average size of a farm in the Tennessee Valley is seventy acres. Three-fourths of the farm consumers are land owners. In the urban area, power is consumed by appliances which provide greater comfort and free the housewives from many laborious tasks. On the farms these uses are combined with equipment which increases agricultural production and improves the quality and therefore the value of the products marketed. More than 87 percent of the farms now have electric service.

Just how is the large amount of power used in the homes? In the urban homes nearly 9 out of 10 homes have an electric refrigerator in addition to all having lights, radio and an electric iron. The electric range is usually the next major appliance purchased and approximately three-fifths of the homes have a range. The saturation of electric water heaters is about 1 out of 3. One home out of 10 is completely electrified, including electricity as the exclusive source of heat. With this electric heat, cooling is combined in many instances to provide year-around comfort. Other appliances, such as television sets, dish washers, automatic clothes washers and driers, and deep freeze units are being installed in increasing numbers.

The rural home as mentioned gives more emphasis to labor-saving devices and those uses of electricity which increase the family means. In addition to those mentioned for the home are water pumps to provide running water for the home and farm. Such a supply of water is a joy to both housewife and farmer.

The electric motor is the handy man of the farm. It turns food crushers, corn shellers, grinding wheels, hay drying fans and feed loaders. The milking machine and chicken brooder have made possible the establishment of thriving dairying and poultry industries in the Tennessee Valley.

The farmer in the Tennessee Valley lives on his own farm and is not located in a village near his land. The job of rural electrification in the Valley is much greater, as in many cases each farm is one-fourth mile from the next. When we consider that only those living in communities of less than 250 population are considered rural, the percentage of homes in the Tennessee Valley already having electric power is very high. The location of India's population in villages will greatly simplify the job of providing electric service to every home.

The small commercial and industrial consumers (those having demands of 50 kw or less) last year had an average annual use of 10,000 kwh. Approximately 5,000 large power consumers of the municipalities and cooperatives used a total of four billion kwh. The groups of industries arranged in order of decreasing use are as follows:

Power Sales by Distributors to Large Industrial Customers by Types of Industry.

Name of Group	% of Total Sales	Name of Group	% of Total Sales
1. Textiles, Leather, and Products	11	6. Food and Kindred Products	7
2. Iron, Steel, and Products	11	7. Service Industries	7
3. Chemicals and Products	8	8. Rubber Products	5
4. Transportation, Communication, and Other Public Utilities	8	9. Paper Products Printing and Publishing	5
5. Stone, Clay, and Glass Products	8	10. Mining and Quarrying	4

The above tabulation indicates the diversity of the industrial use in the Tennessee Valley. The recent trend has been to decentralize many industries. A small factory will be located in a town of 1,000 to 5,000 population. The labor will be drawn, to a large extent, from the surrounding rural areas. One or maybe two members of the family often work in a factory to supplement the farm income.

The other classes of TVA power users are the directly served very large industries, the Federal Agencies, and the private utility companies in adjacent areas. Sales to private utilities have never been a major part of TVA's load and in the last few years of rapid growth TVA is getting as much and often more power from the private companies than is being supplied them.

Load growth of the handful of large directly-served consumers has also been very rapid. This growth represents not a movement of industries from other sections of the country but the expansion of existing industries and the establishment of new ones. The industries are to a large extent in the chemical and metals field. Among the large consumers are governmental agencies including the Atomic Energy Commission and the Air Force Development Center.

TVA has earned a return of 4.3 percent, on its power investment during its 20 years of service. It repays to U. S. Treasury all power appropriations in 40 years after the facilities go into service.

I was recently asked when TVA would be completed. As a supplier of power, TVA has a responsibility to provide for the power needs of a large area. If the past growth of the electric utility industry is any criteria, TVA's job of supplying power will never be finished.

LECTURE ON

DETERMINATION OF HUMAN NORMS

By

P. G. Shah, President, Anthropological Society of Bombay.

The Indian Science Congress has a special section on "science and its social relations" and the relevent sub-committee has done excellent work in selecting suitable topics for the symposium to be held at the time of the annual sessions.

The writer is not aware whether they have discussed the question of watching the progress of human societies in India through "Norms". In India we have "norms" for Indians particularly in matter of health or growth. Without norms of physical fitness, physiological efficiency and mental health and without coordinating the work in the three different branches it is not possible to judge the progress of the individual or the nation as a whole. The provision of scientific research and of numerous national laboratories has received special encouragement under our scientific Prime Minister who has taken so keen interest and Shri S. S. Bhatnagar. The sociological aspects of the evaluation and the development of our human resources however has not yet received adequate recognition. Poverty, ignorance and disease, are the three devils which have sapped the energies of the Indian people, and all the energies of the Social Welfare State are being directed towards the removal of these defects of our social organisation. Every branch of science which the science congress discusses has some contribution or other to make towards the solution of the connected problems. But there is no coordinated effort to examine to what extent the various social welfare programmes have resulted in increased or decreased efficiency of the individual as a whole.

The multipurpose National Sample Survey of the Government of India is an enormous complication of economic and agricultural data, but keeps in background the physical and other requirements regarding health, efficiency and nutrition of the people. The scope of such surveys make them difficult of approach by smaller units.

Community surveys form an important part of new developments in anthropology which is no longer a study of primitive tribes only, but the latest contribution of modern anthropology in Europe and America as noticed by the writer during his recent world study tour is in the direction of making community surveys as "multiphased" and as comprehensive and broad-based as possible. Our review of the efficiency of our human resources should be directed first to the determination of norms and should include a research on "norms" not only of physical health, nutritional status and economic condition but also physiological efficiency and mental health. At the first sight the wide range of subjects may appear to be too formidable to be handled by an individual agency but the problem has to be attacked by the co-operation and coordination of more than one department say of a University or Institution of Research. The burden can be made more tolerable and the expense kept within limits, if the investigation is carefully planned on a sample survey basis and if two or three teams of specialists e.g. anthropologists, medical men and psychologists work together.

The determination of norms for the Indian people is a huge task requiring prolonged and continuous work for the determinations of "norms", two important aspects are to be kept in view. One is regarding the characters to be selected for investigation and second is regarding the method to be adopted for the determination of each of the characters. The other points regarding the samples to be selected for the investigation and the agency through which the work has to be done are matters of comparatively less importance for the purpose of the joint discussion.

The note does not attempt a complete and comprehensive survey of the problem but attempts merely to initiate discussion on the following simple points:

1. A country wide project for determination of "norms" of physical, physiological and mental health should be prepared.

2. For this purpose a joint discussion with the anthropological, psychological and statistical sections of the science congress is desirable.

3. On the physical side, besides the standard anthropometric measurements should include (i) standing height, (ii) sitting height; (iii) weight; (iv) chest and abdomen expansion.

The clinical or physiological examination should include (i) Eyesight, (ii) Ear, (iii) Teeth, (iv) Heart, (v) Blood Pressure, (vi) Blood Group, (vii) Blood Count, (viii) Hæmoglobin, (ix) Urine and Stool. Mental examination should include (i) intelligence quotient, (ii) intelligence test, (iii) projective tests regarding fear, acquisitiveness and aggressiveness.

It is the ordinary practice to have separate valuation of these characters in isolation making it difficult for a proper valuation of man as a whole. Further such surveys if made for individuals *e.g.* adults of either sex or schoolgoing children do not give as full and useful information as would surveys of families selected on sample survey basis. Even if family surveys are delayed the question of determination of "norms" is important and cannot be delayed.

RULES

(as passed by the General Committee at its Meeting on 6th January, 1952)

1. The name of the Society shall be the Indian Science Congress Association, hereafter called the Association.

(A) The objects of the Association shall be :—

(a) To advance and promote the cause of Science in India ;

(b) To hold an annual Congress at a suitable place in India ;

(c) To publish such proceedings, journals, transactions and other publications as may be considered desirable ;

(d) To secure and manage funds and endowments for the promotion of Science, including the rights of disposing of, or selling all or any portion of the properties of the Association ;

(e) To do and perform any or all other acts, matters and things as are conducive to, or incidental to, or necessary for, the above objects.

(B) Membership of the Association shall be open to all persons and organisations interested in the advancement of Science in India.

CONSTITUTION

MEMBERS AND SUBSCRIPTIONS

2. The Association shall consist of Ordinary Members, Honorary Members, Sessional Members and Institutional Members.

(A) A person paying an annual subscription of Rupees twelve (Rs. 12/-) shall become an Ordinary Member of the Association. The annual subscription of an ordinary member shall become due on the 1st February of each year. Any one who fails to pay the subscription on or before the 15th July in any year, shall lose the right of voting and/or holding any office of the Association for that year. A member failing to pay his annual subscription by the end of January following, shall cease to be an Ordinary Member.

(B) Honorary Members of the Association shall be persons eminent for their contributions to Science, or persons who have rendered conspicuous service to the development and welfare of Science in India. The number of such members shall be limited to 25, of whom not more than two shall be elected in any one year. Honorary members shall be elected by not less than a two-thirds majority, by the Council, on the recommendation of the Executive Committee. Such election shall be reported to the General Committee at its Annual Meeting.

(C) Sessional members shall be those who join the Association for the session only. Such members shall be of 3 categories :—

(a) Full Sessional Member. Subscription Rs. 12/-
(b) Associate Sessional Member. „ Rs. 5/-
(c) Student Sessional Member. „ Rs. 2/-

3. Compounding fee :—

(A) Any Ordinary Member may compound all future annual subscriptions by the payment of a single sum of Rs. 200/- (Rupees two hundred).

(B) Any person who has been continuously an Ordinary Member for 10 years or more, shall be allowed a reduction of Rs. 5/- in the compounding fee for every year of such membership, provided always that under no circumstances the compounding fee shall be less than Rs. 50/- (Rupees Fifty).

RIGHTS AND PRIVILEGES

4. An Ordinary Member of the Association shall have the following rights and privileges :—

(A) To contribute papers for reading at the session of the Congress.

(B) To receive free of charge, the usual publications issued by the Association for the session, and other publications at a concession rate to be determined by the Executive Committee, from time to time.

(C) To fill any office in the Association, on being duly elected thereto.

5. An Honorary Member shall have the rights and privileges of an Ordinary Member but shall not be eligible to hold any office other than that of the General President.

6. (A) A Full Sessional Member shall have the right to contribute papers for reading at the session of the Congress, and to receive, free of charge, the usual publications issued by the Association, relating to the session of the Congress, of which he is a member.

(B) An Associate Sessional and a Student Sessional Member shall have the right to submit papers for reading at the session of the congress, of which they are members, provided such papers be communicated through an Ordinary, a Full Sessional or an Honorary Member of the Association.

(C) A Student Sessional Member shall, before admission, be duly certified by the Head of his Institution to be a bonafide student.

(D) An Associate Sessional Member shall receive, free of charge, the part of the Proceedings containing Abstracts of papers contributed to the session of which he is a member.

7. Persons and Institutions coming under the category of Benefactors in terms of the old Rule No. 7 * shall continue to enjoy the rights and privileges embodied in that Rule.

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* 7. *Any person paying a lump sum of Rs. 500/- or more or any institution paying a lump sum of Rs. 1,000/- or more shall be a Benefactor of the Association, subject to the approval of the Executive Committee. Benefactors shall have all rights and privileges of Ordinary Members during their lifetime.*
An institutional Benefactor shall have the right to nominate one person as Ordinary Member of the Association.

OFFICIAL YEAR

8. The official year of the Association shall be from the 1st of February to the 31st January of the following year, but the financial year shall relate to the period from the first of April to the 31st of March of the following year.

EXECUTIVE COMMITTEE

9. There shall be an Executive Committee for carrying on the administration of the Association. All important questions of policy shall be referred to the Council in the first instance, and the recommendations of the Executive Committee thereon, shall be placed for consideration before the General Committee at its Annual Meeting.

10. (A) The Executive Committee shall consist of the President, the immediate past President, the two General Secretaries, the Treasurer and 10 Ordinary Members elected by the General Committee. It shall also include one nominee of the Government of India, preferably from among the Ordinary Members of the Association.

(B) For the purpose of election of 10 members of the Executive Committee by the General Committee, an Ordinary or Honorary Member may purpose the name of any Ordinary Member. Such proposal must, however, be seconded by another Ordinary member (or Honorary Member) and reach the General Secretary at Head Quarters before the 15th of September. The Executive Committee shall scrutinize the nominations and circulate the valid names, together with such other names. not exceeding three, as it may suggest, to all Ordinary and Honorary Members for election by ballot. The ballot paper shall be scrutinised by the President or his nominee, and such of the General Secretaries as are present at the session and the result of the ballot shall be announced during the session at the Annual Meeting of the General Committee.

(C) Ordinary Members who have served on the Executive Committee for three successive years, shall not be eligible for election as members of the Executive Committee for a period of two years thereafter.

(D) The Executive Committee shall co-opt as its members not more than two Local Secretaries for the ensuing session of the Congress.

POWERS AND DUTIES OF THE EXECUTIVE COMMITTEE

11. The powers and duties of the Executive Committee shall be as follows :—

(A) To manage the affairs of the Association and for this purpose to frame such regulations, as may be deemed necessary, for the

efficient administration of the Association ; provided always that such regulations be not inconsistent with anything contained in these Rules and that they be reported to the next meeting of the General Committee for approval.

(B) To direct and manage the publication of the proceedings and other publications of the Association.

(C) To appoint salaried officers, clerks or servants as may be considered necessary, to fix their salaries, gratuities, honoraria and privileges, and to suspend, dismiss or dispense with their services as may be required, provided that all such actions shall be reported to the next meeting of the General Committee.

(D) To prepare and submit to the General Committee at its Annual Meeting, to be held during the session of the Science Congress, the Annual Report of the working of the Association and the Audited Statement of the income and expenditure for the preceding financial year, the balance in hand, the assets and liabilities, together with the budget of the estimated income and expenditure of the ensuing financial year.

(E) To deal with all matters, not otherwise provided for in these Rules subject to these being reported to the General Committee at its Annual Meeting.

MEETINGS OF THE EXECUTIVE COMMITTEE

12. (A) There shall be three Statutory Meetings of the Executive Committee—one each at Delhi, at Calcutta and at the venue of the Congress. Additional meetings, as may be necessary, may also be held. Notice of such meetings, along with the Agenda, shall be sent out at least a fortnight before the date of the meeting. Emergency meetings may, however, be convened by the General Secretaries, at the instance of the President, giving a week's notice.

(B) The ordinary method of voting shall be by show of hands, but on demand, the votes shall be taken by ballot.

(C) The Chairman shall be entitled to vote. When votes are equal, he shall have a second or casting vote.

(D) Minutes of the Proceedings of every meeting of the Executive Committee shall be taken during its progress, by one of the General Secretaries and in case of their absence by one of the members, whom the Chairman may appoint for the purpose. The Minutes shall afterwards be circulated to all members of the Executive Committee.

(E) Five members shall form a quorum.

GENERAL COMMITTEE

13. There shall be a General Committee consisting of all the Ordinary and Honorary Members of the Association.

14. (A) The Annual Meeting of the General Committee shall be held during each session of the Congress. Fifty one members shall form the quorum for this meeting. Decisions shall ordinarily be taken by a show of hands of the majority of the members present and voting at the meeting. Any member may, however, demand a ballot on any question and the ballot shall be taken at the meeting. In any matters at the requisition of 26 members (Ordinary and/or Honorary) the President shall direct that a postal ballot be taken.

(B) An emergency meeting shall be convened to discuss any specific matter during the session of the Congress if a requisition signed by not less than 50 Ordinary and Honorary members be received by the General Secretary at Head Quarters * a fortnight before the Commencement of the Session.

COUNCIL

15. (A) There shall be a Council consisting of the members of the Executive Committee, all such Ordinary or Honorary Members of the Association who have held Office as President, General Secretary, or Treasurer, the Sectional Presidents for the Session, seven Ordinary Members of the Association elected by the General Committee, and conveners or secretaries of statutory committees as may be appointed by the General Committee.

(B) For the election of 7 Ordinary Members to the Council, any Ordinary or Honorary Member may propose the name of an Ordinary Member. Such proposal, however, shall be seconded by another Ordinary or Honorary Member and must reach the General Secretary at Head Quarters * before the 15th of September. The Executive Committee shall scrutinise these nominations and circulate the valid names, together with such other names, not exceeding three, as it may suggest, to all Ordinary and Honorary Members, for election by ballot. The ballot papers shall be scrutinised by the President or his nominee and such of the General Secretaries as are present at the session, and the results of the ballot shall be announced during the session at the Annual Meeting of the General Committee.

(C) Ordinary Members, who have served on the Council for three successive years, shall not be eligible for election as members of the Council for a period of two years thereafter.

16. The Council shall be consulted by the Executive Committee on all important questions of policy or scientific import. In the matter of election of Office-bearers, the Council shall exercise such powers as are assigned to it, under the rules.

GENERAL PRESIDENT

17. (A) The Association shall have a General President. He shall be elected annually[1] by the Executive Committee from among the names proposed by the members of the Council, in accordance with the procedure laid down in the Regulations. The election shall be reported to the General Committee at its Annual Meeting, during the session of the Congress.

(Note:—[1]The General President shall assume office on the 1st of February and relinquish the same on the 31st January of the succeeding year).

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* *Calcutta.*

(B) Powers and Duties of the General President shall be as follows:—

(a) To preside at all meetings of the Association, of the Council, and of the Executive Committee and to regulate the proceedings at such meetings.

(b) To ensure due effect being given to these Rules and to the Regulations made thereunder.

(c) In absence of any definite Rule or Regulation on any question likely to arise in connection with the administration of the Association or in the case of a doubt as to the interpretation of any of the Rules and Regulations, the President shall give a decision and his ruling or interpretation shall prevail for the time being.

(d) He shall be an ex-officio member of all Committees and Boards appointed by the Executive Committee.

(e) He shall have the power of summoning, through the General Secretary at the Head Quarters *, a special meeting of the Executive Committee or of the Council, giving a week's notice to all members thereof.

GENERAL SECRETARIES

18. There shall be two General Secretaries from among the Ordinary Members of the Association, one of whom shall be resident at the Head Quarters * of the Association. They shall be elected by the Council on the recommendation of the Executive Committee, in accordance with the procedure laid down in the Regulations. The election shall be reported to the General Committee at its Annual Meeting, during the Session of the Congress.

(B) Powers and Duties of the General Secretaries shall be as follows:—

(a) To conduct the affairs of the Association, in accordance with the Rules and Regulations of the Association, provided always that some of the powers and duties may be delegated, with the consent of the Executive Committee, to other members of the Executive Committee.

(b) To record, or cause to be recorded, the proceedings of the meetings of the Association, during their progress.

(c) To edit the publications of the Association with the help of the Editorial Board or Committee, if constituted for this purpose, and to be the custodian of important documents and papers.

(d) To exercise general supervision over the salaried staff and all affairs of the Association and to fine or suspend any member of the salaried staff for gross negligence of duty or misconduct, subject to confirmation by the Executive Committee.

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* *Calcutta.*

(e) To delegate some of their powers and duties, by mutual agreement among themselves, to the Local Secretaries during the Annual Session of the Congress.

(f) To be ex-officio Members of all Committees and Boards constituted by the Executive Committee.

(g) To exercise supervision over exchange or sale of books and other publications of the Association and to report such sales or exchanges to the Executive Committee at the next meeting for information.

TREASURER

19. (A) There shall be a Treasurer, elected by the Council on the recommendation of the Executive Committee, in accordance with the procedure laid down in the Regulations, from among the Ordinary Members of the Association residing at the Head Quarters. The election shall be reported to the General Committee at its Annual Meeting during the Session of the Congress.

(B) Powers and Duties of the Treasurer shall be as follows:—

(a) To receive and hold on behalf of, and for the use of the Association, all moneys received by the Association ; to disburse all sums due from the Association and to keep accounts of all such receipts and disbursements. Disbursements exceeding Rs. 200/- shall be made only by order of the Executive Committee under the signature of the Chairman of the meeting at which the order was passed.

(b) To submit all accounts and vouchers of receipts and disbursements annually to the Executive Committee for examination and also to the auditors when required by them.

(c) To keep separate accounts of funds, if any, administered by the Association on behalf of Government or any individual or organisation.

(d) To be an ex officio member of all Committees and Boards appointed by the Executive Committee.

TERM OF OFFICE OF GENERAL SECRETARIES AND TREASURER

20. The term of office of each General Secretary and of the Treasurer shall be for a period of three years, following election. A General Secretary or Treasurer shall not be eligible for re-election to the same office for a period of two years after the termination of appointment.

21. In the event of a vacancy amongst the General Secretaries and the Treasurer occurring between two sessions of the Congress, the Executive Committee shall have the power to appoint a General Secretary or the Treasurer for the period up to the termination of the next session of the Congress.

LOCAL SECRETARIES AND RECEPTION COMMITTEE

22. There shall be two or more Local Secretaries for each Session of the Congress. They shall be appointed by the Executive Committee, in consultation with the Organisation inviting the Congress to hold the Session. Not more than two of the Local Secretaries shall be co-opted as members of the Executive Committee, as provided for in Rule 10 (D). The Local Secretaries shall all be members of the Association and the Local Secretaries co-opted on the Executive Committee, shall be Ordinary Members of the Association.

23. There shall be a Reception Committee for each Session of the Congress. The Reception Committee shall be formed in accordance with the Regulations framed for the purpose.

24. The Reception Committee shall, in consultation with the Executive Committee, make all necessary arrangements for holding the Session of the Congress.

SECTIONAL OFFICERS AND SECTIONAL COMMITTEES

25. (A) For the purpose of scientific deliberations during the session of the Congress, there shall be such Sections, corresponding to different branches of science, as may from time to time be constituted by the General Committee, on the recommendation of the Council.

(B) It shall be competent for any section, after its first day's meeting at the session, to hold its scientific meetings in sub-sections, for the purpose of dealing conveniently with different groups of papers submitted to the section. To conduct deliberations in each sub-section a separate Chairman and a reporter may be appointed by the Sectional President, in consultation with the Sectional Committee. Persons thus appointed will not, however, be considered as Sectional Officers. In each section, there shall be the following Sectional Officers:—The President, the Recorder, and the Local Sectional Secretary.

26. The President and the Recorder shall be elected by the Sectional Committee from among the Ordinary Members of the Association, in accordance with the procedure laid down in the Regulations, for the purpose. Where this procedure has not been followed, these appointments shall be made by the Executive Committee, after receiving nominations from the Sectional Committee. There shall be a Local Sectional Secretary who shall be appointed by the Executive Committee, on the recommendation of the Local Secretaries.

27. (A) The President shall be elected annually. The term of office of the Recorder shall be for a period of three following years, following election.

(B) The work of each Section shall be conducted by a Sectional Committee which shall consist of the following:—

(a) Sectional Officers [vide Rule 25 (B)].

(b) All Ordinary and Honorary Members of the Association who have been Presidents of the Section or who have served as Recorders for a full term.

(c) Four Ordinary Members of the Association, elected annually by the Ordinary and Honorary Members belonging to that section, in accordance with the Regulations made for the purpose.

(C) The President and the Recorder shall be executive officers of the Section. They shall have power to act on behalf of the Sectional Committee in any matter of urgency, which can not be brought before the Sectional Committee for consideration, but they shall report such action to the Sectional Committee at its next meeting.

(D) The Sectional President shall be the convenor of the meetings of the Sectional Committee and shall preside over all meetings of the Committee. His ruling shall be final on all points of order that may arise.

In the absence of the President at any meeting of the Sectional Committee the senior-most past President of the Section, present at the meeting, shall take the chair. In the absence of any past President, the Sectional Committee shall elect a Chairman for its meeting.

(E) The Sectional Committee shall meet prior to the first meeting of the Section, and daily thereafter during the session, unless otherwise determined at a meeting of the Sectional Committee.

(F) The Sectional Recorder shall act as the Secretary of the Sectional Committee and shall maintain a proper record of the proceedings of the Sectional Committee and of the Section, in a book provided for the purpose. He shall be responsible for the punctual transmission to the General Secretary at Head Quarters *, of the resolutions adopted by the Sectional Committee or by the Section.

(G) In the absence of the Recorder, the Sectional President may appoint one of the members of the Sectional Committee to carry on the duties of the Recorder, for the session.

(H) The Local Sectional Secretary shall be a resident of the place where the Session of the Congress is being held. He shall be responsible for all local arrangements for the work of the Section and for arranging the Sectional Excursions, in consultation with the Local Secretaries.

SUBMISSION OF PAPERS

28. (A) All papers submitted for reading at the session of the Congress shall be forwarded to the General Secretary at Head Quarters * so as to reach him not later than the 15th of September preceding the Session.

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* *Calcutta.*

(B) A paper submitted for reading at any section of the Congress shall be accompanied by an abstract, in triplicate, not exceeding 200 words. Abstracts, unaccompanied by complete papers, shall not be accepted.

(C) All papers submitted for reading at a Session of the Congress shall be checked by the General Secretary at Head Quarters *, in regard to the standing of the authors of the papers as members of the Association. Each paper together with a copy of its abstract shall then be sent by the General Secretary to the Sectional President concerned, for refereeing and acceptance. All reports of referees shall be confidential. The decision of the Sectional President regarding the acceptance of any paper shall be final.

(D) Each paper shall be accompanied by a Declaration that the data and information presented therein will not have appeared in print before the conclusion of the Session of the Congress at which it is to be read.

(E) Abstracts of only the papers received by the General Secretary at the Head Quarters *, on or before the 15th of September, and accepted for reading at the session, shall be printed in Part III of the Proceedings. In exceptional circumstances, however, abstracts of papers received after the due date may be printed in Part IV, provided that such papers have been read at the Section and the publication of their abstracts has been specially recommended by the Sectional President.

PUBLICATION OF PROCEEDINGS

29. The Proceedings of the Indian Science Congress Association shall be published in one volume, in four separate parts, as follows:—

Part I. Contents:—List of Officers, Proceedings of the Inaugural meeting of the Session (except the General Presidential Address) and all Official matters.

Part II. „ All Presidential Addresses.
(*Note*:—This shall be distributed at the session to all Ordinary, Honorary and Full Sessional Members that attend the Session and shall be sent by post, after the session, to the rest of the members of the above categories).

Part III. „ Abstracts of papers accepted for reading at the Session, in accordance with Rule 28.
(*Note*:—This part shall be distributed before the session, to all members of the Association).

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* *Calcutta.*

Part IV. „ Discussions held at the Session, Late Abstracts (accepted for publication in accordance with Rule 28 E), List of Members of the Association, and the Index.

(*Note*:—Parts I to IV shall be distributed to all Ordinary, Honorary and Full Sessional Members).

CHANGE OF RULES

30. The following procedure shall be observed for making any addition to, or alteration in, the Rules of the Association.

(A) Proposal for additions to, or alteration in, the existing Rules may be made by the Executive Committee, the Council, the Ordinary Members or the Honorary Members of the Association. Such proposals, along with amendments, if any, and the opinions thereon, of the Executive Committee and the Council, shall be placed before the General Committee for its consideration, at its Annual Meeting, during the Session of the Congress.

(B) The General Committee shall have at least one month's previous notice of the proposals made by the Executive Committee or by the Council. At least six weeks' previous notice of proposals made by Ordinary Members or Honorary Members shall be given to the General Committee.

(C) Proposals by Ordinary or Honorary Members shall be sent to the General Secretary at Head Quarters * so as to reach him *at least two months before* the meeting of the General Committee at which they are to be considered. The General Secretary at Head Quarters shall circulate such proposals to all Ordinary and Honorary Members of the Association, at least six weeks before the meeting of the General Committee.

(D) Any amendments to the proposals circulated in accordance with Rule 30 (C) shall be sent by Ordinary or Honorary Members to the General Secretary at Head Quarters * so as to reach him at least a month before the meeting of the General Committee. Amendments to proposals from the Executive Committee or the Council shall reach the General Secretary at Head Quarters, at least two weeks before the meeting of the General Committee.

(E) At the meeting of the General Committee, the voting on such proposals and amendments, shall be in accordance with Rule 14 and the proposals shall be accepted if not less than two-thirds of the number of members present and voting, cast their vote in favour of the proposals.

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* *Calcutta.*

REGULATIONS

I. SECTIONAL OFFICERS

(1) The President delivers a Presidential Address of which ordinarily the cost of printing 16 pages of the Proceedings in its usual form shall be borne by the Indian Science Congress Association and any author exceeding the limit shall bear the extra cost provided that in no case the presidential address shall exceed 25 pages. The time available for delivery of the Presidential Address shall usually not exceed 45 minutes. The manuscript of the address, ready for the press, should be received by the General Secretary before October 15th of the calendar year preceeding the Session of the Congress at which the address will be delivered, provided that this date may be changed by the Executive Committee for special reasons. It should be accompanied by 12 copies of a short popular summary (about 500 words) for issue to the lay press. The time and date of the delivery of the President's Address will be communicated before the meeting of the Congress. No two Presidential Addresses will be delivered at the same time.

(2) The President shall be entitled to receive 30 copies of his address without charge, and additional copies at the cost of reproduction.

(3) Railway fares, postage, clerical or other expenses incurred by the Sectional Presidents will not be paid by the Association.

(4) The following procedure is adopted for the collection of papers for the Sections:—

About the middle of April a number of copies of a printed circular will be forwarded to the President of each Section who may arrange to send these to workers in that branch of science with which his Section is concerned, requesting them to contribute papers for reading before the next meeting of the Congress.

The circular will contain a clause inviting such workers as are not yet Ordinary Members of the Association to join as such. Particular note should be taken of the fact that no new Ordinary Members are enrolled after the 15th July of the year.

In the case of joint papers, each author must be a Member of some category.

(5) The President referees, either in person or by proxy, the papers received for reading before his section in accordance with Rule 34.

Abstracts should be limited, except in very special cases, to about 200 words. Long abstracts should be reduced by the President. Reference to literature in abstracts should be avoided as far as possible and when given should conform to the system of abbreviation used by the Association.

The contents of all abstracts should be carefully checked by such person or persons as appointed by the General Secretary and the abstracts shall then be sent to the Sectional President for his final scrutiny and approval.

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* *Calcutta.*

Joint discussions on related papers may be held. Authors of papers should be informed of the time allotted by the President to the reading of their papers. An author contributing more than one paper should be asked to specify which of them he would prefer to read at the meeting.

(6) The President, in consultation with the Local Sectional Secretary, shall make arrangements for such local Sectional excursions as seem desirable. Due notice shall be given to the General Secretaries of all such arrangements.

(7) The President and the Recorder should, in consultation with other members of the Sectional Committee, make proposals to the General Secretary regarding the programme of the Section. Such proposals should reach the General Secretary not later than the 1st November, so as to enable the necessary details to be entered in the programme. General discussions on questions of importance, held either by a single Section or jointly by two or more Sections, should be encouraged.

The Sectional Presidents concerned shall communicate to the General Secretary before the end of July the titles of such Discussions, the names of the speakers and such further information as may be considered necessary.

The Papers, together with three copies of abstracts, to be read by the contributors at a Discussion shall be sent to the General Secretary on or before the 15th September of the preceding calendar year by the Sectional President concerned.

The materials relating to a Discussion, in a form ready for the press, shall be communicated to the General Secretary within a month from the date on which the Discussion takes place ; the material not received by the General Secretary within this period shall not be published.

The President and the Recorder of the Section arranging a Discussion shall carry out the necessary correspondence throughout the year during which they hold office.

(8) Early in November copies of a printed form will be issued to Presidents of Sections for circulation to members of the Sectional Committees requesting them to nominate a President and a Recorder for the ensuing meeting for consideration by the Sectional Committee. Such proposals shall be accompanied by a statement of qualifications of the nominees for the office and their willingness to accept the same if elected thereto.

During the first week of December, the President of each Section shall circulate all such proposals received by him, together with the statements of qualifications to the member of the Sectional Committee and request them to nominate by ballot one member for each office from among the list circulated, the ballot papers being received by him up to the 20th December.

At the first meeting of the Sectional Committee held on the opening day, the ballot papers shall be opened and scrutinized as the Chairman shall direct and the result communicated to the Executive Committee for consideration, together with a complete record of the Proceedings in this connection.

(9) The duties of the Local Sectional Secretary are given in Rule 27 (H).

(10) All persons entitled to be members of the Sectional Committee should enrol themselves without delay as Ordinary Members if not already so enrolled and should inform the General Secretary of the payment of their subscription when accepting the appointment.

(11) The General Secretary should be consulted whenever any question arises not dealt with in these regulations.

II. LOCAL ARRANGEMENTS

In accordance with the Rules of the Association, the Local Secretaries, and the Local Committee shall jointly, on behalf of and in consultation with the Executive Committee, make all necessary arrangements for holding the Session of the Congress.

The following arrangements have to be made :—

A. Accommodation for the Scientific Meetings

(1) A large hall should be available for (a) the President's address on the opening day, and (b) for the evening lectures. Both (a) and (b) are open to the public free of charge. A projection lantern with an operator should be available in this room, and it is a great advantage if loud speakers can be installed.

(2) Rooms for the meeting of the different Sections of the Congress should be provided and suitably furnished. An epidiascope with an operator should be provided in each sectional room. All the rooms should be as far as possible in close proximity.

The following are the Sections of the Congress :—

Mathematics, Statistics, Physics, Chemistry, Geology and Geography, Botany, Zoology and Entomology, Anthropology and Archaeology, Medical and Veterinary Sciences, Agricultural Sciences, Physiology, Psychology and Educational Sciences, and Engineering and Metallurgy.

(3) A Reception room should be provided in which members can get information, write letters, etc. The Local Secretaries' Office should be as near as possible to this room. An arrangement should be made with the Postmaster-General to have a temporary Post Office in this room for all letters addressed to members C/o. The Indian Science Congress to be delivered here. The Indian Congress Post Office should be situated as near as possible to the Reception room.

(4) A room near the Reception room should be set apart for the General Secretaries' which will be opened therein from the 31st December.

(5) Provision should be made for lunch in European and Indian styles at moderate charges near the Reception room.

B. Accommodation for Visiting Members

The Local Secretaries should send out, not later than the end of November, a printed circular to all members enrolled, asking them if they desire that accommodation should be arranged for them. It is desirable, as far as possible, to provide private hospitality for the President, Sectional Presidents and Officers of the Congress. In this circular information should be given regarding the types of accommodation available, with the charges, and the nature of the climate during the Session. The Local Secretaries will receive periodically from the General Secretary list of members enrolled at headquarters.

C. Programme of the Meeting

(1) (a) The Sections of the Congress meet daily in the morning generally from 9-30 A.M.

(b) Presidential Addresses of the Sections shall commence from 9-30 A.M.

(c) There should be no afternoon Presidential Addresses of the Sections.

(d) Symposia or joint discussions will be held either in the morning or from 2 P.M.

(2) Public lectures are arranged by the Executive Committee, and are given at 6 P.M. or 6-30 P.M.

(3) A printed guide with a map of the locality in which the Congress is held should be prepared for distribution to members on the opening day. Only Ordinary, Honorary and Full Session Members are entitled to the Guide Book free of cost. A small charge not exceeding Re. 1/- (to be fixed by the Local Committee) may be made to other members desiring to have a copy. The Guide Book should contain a summary of information concerning the scientific and educational activities and a short history of the locality, in addition to general information likely to be of use to visitors.

(4) Arrangements should be made for giving due publicity to the activities of the Congress, both before and during the meeting.

(5) A list of members with their local addresses, where known, should be printed and distributed on the opening day. A supplementary list should be typed and posted in the Reception room and maintained up-to-date. The Local Secretaries shall arrange for this.

(6) A provisional programme of social engagements should be drawn up by the Local Secretaries and sent to the General Secretary by the 15th November. It is essential that this be sent in time, as it has to be printed and distributed with the abstracts by the first week of December.

The General Secretary will make arrangements for printing the programme drafted as above and distributing those to members enrolled at the time of the distribution of the abstracts.

The final programme shall be printed locally by Local Committee in time for the opening of the Session.

D. General

(1) Numbered badges for members of the Congress will be sent by the General Secretary to the Local Secretaries for distribution on the opening day of the meeting. The badges should bear numbers corresponding to the enrolment numbers. There should be additional badges for Officers.

(2) Members of the Local Reception Committee who have made substantial contributions to the funds of the Local Committee may be given complimentary tickets to attend the meetings.

(3) An audited copy of the accounts of the Local Committee should be sent to the General Secretary not later than the 30th April, following the Session, for inclusion in the Proceedings of the Session. It is desirable that the Local Committee should contribute any surplus to the reserve fund of the Association.

(4) Twelve copies each of all local publications connected with the Congress (Guide Book, final programme, notices, cards, etc.) should be sent to the office of the Association for record at the conclusion of the meeting.

(5) Applications for membership will ordinarily be dealt with by the General Secretary at the Office of the Association up to the 15th December. After that date applications for membership will be forwarded to the Local Secretaries, who will open a separate account for sale of membership tickets. The amount thus realized, together with unsold tickets, should be forwarded to the General Secretary immediately after the close of the Congress.

III. FINANCIAL

(1) The accounts of the Association shall be audited once a year and the books closed on the 30th November each for this purpose.

(2) The audited accounts shall be placed before the General Committee at the Annual Meeting with the observations, if any, of the Executive Committee.

(3) Sanction for all payments for amounts exceeding Rs. 100 shall be obtained from the Finance Committee which shall consist of the General Secretaries, the Treasurer and one Ordinary or Honorary Member resident in Calcutta who shall be nominated by the Executive Committee.

(4) Amounts received on account of Life Membership Subscription shall be credited to the Reserve Fund of the Association.

IV. ELECTION OF REPRESENTATIVES OF ASSOCIATION BY THE EXECUTIVE COMMITTEE:

(1) A letter shall be issued asking for nominations giving a last date therefor.

(2) The proposer should ascertain whether the person he purposes is desirous of serving in that particular capacity.

(3) After the nominations have been received the names should be circulated in a ballot paper and the date for return should be fixed two weeks after the ballot paper is sent out.

V. NOMINATION OF GENERAL PRESIDENT

(1) The General Secretary shall invite nominations for the office of General President of the Association, two years in advance, by a circular letter to the members of the Council, not later than the 15th October. Such circular shall include a list of the General President of the past 15 years, and the branches of science in which they had specialized.

Nomination shall reach the General Secretary not later than the 15th of November.

(2) The General Secretary shall circulate the nominations received to the members of the Executive Committee for expression of opinion on or before the 30th November. Such opinions shall reach the General Secretary not later than the 15th December.

(3) The nominations, together with the views of members thereon, shall be placed for decision before a meeting of the Executive Committee to be held on the day previous to the commencement of the Session of the Congress.

(Adopted the 5th January, 1937. Received the 8th January, 1939, the 6th January, 1940, the 6th January, 1941, the 5th January, 1942, the 4th January, 1943, and the 5th January, 1945).

STATEMENT OF ACCOUNT

INDIAN SCIENCE CONGRESS

Balance Sheet as at

LIABILITY.

General Fund

	Rs. As. P.	Rs. As. P.
as per last account	37,575 5 9	
Less excess of expenditure over income for the year	1,541 14 2	
	36,033 7 7	
Less excess of expenditure over Govt. grant on a/c of Foreign Scientists for 39th Session as at 31-3-52	3,733 7 6	
	32,300 0 1	
Add deficit on Foreign Scientists at Poona Session now recovered	5,158 5 0	37,458 5 1
Reserve Fund		
As per last account	22,377 9 4	
Interest earned	558 0 0	
Add liabilities of last year now reversed	13,000 0 0	35,935 9 4
Staff Provident Fund		**1,509 9 2**
		Rs. 74,903 7 7

ASSOCIATION.

31st March, 1952.

ASSETS.

	Rs. As. P.	Rs. As. P.
Furniture & Fittings		
as per last account	2,865 15 3	
Since added	605 11 6	
	3,471 10 9	
Less depreciation	171 15 3	3,299 11 6
Typewriter		650 0 0
Advance		4,842 9 6
Advance to K.L.M. air passage		3,705 8 0
Reserve Fund Investment		
4% loan 1960-70 (face vaue Rs. 12,500/-); Victory loan 1959-61 (face value Rs. 2,000/-); P.O. 12 years National Savings Certificate (face value Rs. 5,000/-)	21,288 3 5	
Imperial Bank of India	1,647 5 11	22,935 9 4
Staff Provident Fund Investment		
Imperial Bank of India S/B a/c		1,509 9 2
Cash Balances		
Cash-in-hand	75 0 0	
Cash-at-Bank	37,885 8 1	37,960 8 1
		Rs. 74,903 7 7

I have audited the Balance Sheet as at 31st March, 1952 and the annexed Income and Expenditure Account, also the Statement of expenditure on Foreign Scientists of the Indian Science Congress Association for the year ended 31st March 1952 with the books and vouchers of the Association and have obtained all the information and explanations I have required. In my opinion the Balance Sheet and the Income and Expenditure Account are properly drawn up and the Balance Sheet exhibits the true and correct view of the Association's affairs as on that date according to the best of my information and explanations given to me and as shown by the books of the Association, subject to my separate report of even date.

20, Strand Road,
1st Floor,
Calcutta-1,
30th June, 1952.

Sd./- S. N. Chatterji,
Chartered Accountant.

INDIAN SCIENCE CONGRESS

Income and Expenditure Account for

	Rs.	As.	P.
To Postage	2,807	6	3
„ Contingency	455	6	0
„ Printing	17,765	4	9
„ Establishment	6,960	12	0
„ Binding	1,428	0	6
„ Telephone	336	11	0
„ Rent	1,200	0	0
„ Stationery	1,581	11	3
„ Purchase of Paper	10,300	10	0
„ Miscellaneous	348	4	0
„ Travelling	5,306	15	0
„ Sessional expenses	2,288	4	6
„ Association's Contribution to Provident Fund ..	170	0	5
„ Depreciation on Furniture	171	15	3
„ Bank Charges	116	11	0
Rs.	51,237	15	11

ASSOCIATION.

the year ended 31st March, 1952.

By Membership Subscription	36,348	3	3
„ Life Membership Subscription	2,052	0	0
„ Publication	1,233	8	6
„ Miscellaneous	62	6	0
„ Govt. Grant	10,000	0	0
Excess of Expenditure over Income	1,541	14	2
Rs.	51,237	15	11

Sd/- S. N. CHATTERJI.

INDIAN SCIENCE CONGRESS

Statement of Government Grant and Expenditure

	Rs.	As.	P.
To Travelling Allowance	75	8	0
„ Air Fare in India	10,361	14	0
„ Transport Charges	114	0	0
„ Hotel Charges	10,340	13	0
„ Medical Expenses	387	0	0
„ Air fare to and from India	4,003	0	0
„ Travelling and Conveyances	1,131	9	0
„ Cancellation charges of Air and Railway tickets ..	137	10	0
„ Railway fare	1,495	3	0
„ Telegram, Telephone and Petties	120	15	0
„ Lunch and Tiffin	96	0	0
„ Entertainment	120	0	0
„ Sundries	137	8	0
„ Trunk Call	114	1	0
„ Petrol	79	6	6
„ Bank Charges	19	0	0
Rs.	28,733	7	6

ASSOCIATION.

on Foreign Scientists, 39th Session as at 31-3-52.

By Government Grant	25,000	0	0
„ Excess of expenditure over Government grant ..	3,733	7	6
	Rs. 28,733	7	6

Sd/- S. N. CHATTERJI.

INDIAN SCIENCE

1, PARK STREET,

BUDGET (INCOME)

		Revised estimate for the period 1-4-52 to 31-3-53.			Estimated for the period from 1-4-53 to 31-3-54.		
		Rs.	As.	P.	Rs.	As.	P.
1.	Membership Subscription ..	30,000	0	0*C	32,000	0	0*B
2.	Sale of Publication ..	1,000	0	0	1,200	0	0
3.	Life Membership ..	2,000	0	0	2,000	0	0
4.	Misc. Receipt ..	350	0	0	350	0	0
5.	Grant from National Institute of Sciences ..	500	0	0	Expected 500	0	0
6.	UNESCO Grant ..	..			..		
7.	Government Grant ...	22,000	0	0	30,000	0	0**
		55,850	0	0	66,050	0	0

* Calcutta attracts many more full session and student members than other places. For the Lucknow Session Rs. 30,000|- should therefore represent a reasonable figure as estimated income under membership subscription. The Association expects to take steps to increase the membership, and therefore the income for the year 1953-54 has been put down at Rs. 32,000|-

B. The question of increasing the subscription rates has been engaging the attention of the Executive Committee for a long time. At the last General Committee meeting an attempt was made to increase the subscription to Rs. 15|- per year as against the present Rs. 12|-. The General Committee was almost unanimously opposed to it as the bulk of the members of the Indian Science Congress Association is teachers whose salaries as a rule range from about Rs. 150/- to Rs. 300/- per month inclusive of allowances.

** The Government of India have agreed to consider giving a recurring grant upto a limit of Rs. 22,000 and have suggested economies in expenditure on printing and paper. The Government of India have been approached for a block grant of Rs. 30,000|- on the ground that by exercising the utmost economy on paper, printing and proof reading the expenditure on publication cannot be reduced to less than Rs. 30,000|-.

CONGRESS ASSOCIATION

CALCUTTA-16.

BUDGET (EXPENSES)

		Revised estimate for the period 1-4-52 to 31-3-53.			Estimated for the period from 1-4-53 to 31-3-54.		
		Rs.	As.	P.	Rs.	As.	P.
1.	Establishment with allowances	11,928	0	0	16,960	0	0A
2.	Allahabad Office ..	600	0	0	600	0	0
3.	Provident Fund ..	222	0	0	760	0	0
4.	Audit Fee ..	200	0	0	200	0	0
5.	Honorarium ..	2,000	0	0	2,000	0	0
6.	Rent & Taxes ..	1,200	0	0	2,400	0	0
7.	Telephone ..	350	0	0	350	0	0
8.	Postage ..	3,541	0	0	3,500	0	0
9.	Printing ..	15,100	0	0	15,100	0	0
10.	Binding ..	2,500	0	0	2,500	0	0
11.	Purchase of Paper ..	8,600	0	0	10,000	0	0
12.	Stationery & Misc. Stores ..	3,600	0	0	2,500	0	0
	Allahabad Office ..	600	0	0	..		
13.	Contingency & Local Conveyance ..	800	0	0	800	0	0
14.	Sessional Expenses including Travelling expenses-Staff & freight ..	4,200	0	0	5,000	0	0
15.	Misc. (Bank charges etc.) ..	400	0	0	900	0	0
16.	Travelling Allowances to members of the Executive Committee to attend the Statutory meeting ..	8,500	0	0	8,500	0	0
17.	Depreciation on Furniture ..	200	0	0	250	0	0
18.	To Reserve Fund (Liabilities of last year now reversed) ..	..			..		
19.	To Reserve Fund (Life Membership fee) ..	2,000	0	0	2,000	0	0
20.	To Building Fund (10% of income from membership fee) ..	3,000	0	0	3,000	0	0C.
		69,541	0	0	77,320	0	0
Less Budget (Income) as aboye ..		55,850	0	0	66,050	0	0
DEFICIT ..		13,691	0	0	11,270	0	0D

A. For efficient work in the office the appointment of a whole time Assistant Secretary and an Accountant is essential.

C. Please see note (*) above under Budget (Income).

D. If the grant is raised to Rs. 30,000/- by the Central Government then only the deficit would be Rs. 11,270/- as stated in the Budget Estimate for 1953-54 otherwise on the basis of the present grant (Central Govt.) of Rs. 22,000/- the deficit would be Rs. 19,270.

INDIAN SCIENCE CONGRESS ASSOCIATION

1, Park Street, Calcutta.

Estimated expenditure on salaries and allowances to staff & Establishment for the year 1952-53.

1. *Establishment (Salary).*

		Rs.	Rs.
Asst. Secretary:—			
@ Rs. 200/- for 3 days of April	..	20/-	
@ Rs. 200/- for 3 months	..	600/-	
@ Rs. 400/- for 8 months	..	3,200/-	
			3,820/-
General Assistant:—			
@ Rs. 170/- for 8 months	..	1,360/-	
@ Rs. 180/- for 4 months	..	720/-	
			2,080/-
Clerk-Typist:—			
@ Rs. 50/- for 8 months	..	400/-	
@ Rs. 55/- for 4 months	..	220/-	
			620/-
Steno:—			
@ Rs. 165/- for 12 months	..	1,980/-	1,980/-
Peon (Ramesh):—			
@ Rs. 22/- for 8 months	..	176/-	
@ Rs. 23/- for 4 months	..	92/-	
			268/-
Peon (Umesh):—			
@ Rs. 16/- for 8 months	..	128/-	
@ Rs. 17/- for 4 months	..	68/-	
			196/-
			8,964/-

2. *Allowances.*

Asst. Secretary:—			
@ Rs. 90/- (Rs. 70/- plus Rs. 20/-) for 8 months	.. ..	720/-	
General Assistant:—			
@ Rs. 65/- for 12 months	..	780/-	
Clerk-typist:—			
@ Rs. 42/- for 12 months	..	504 -	
Peon:—			
No. 1—@ Rs. 40/- for 12 months	..	480/-	
No. 2—@ Rs. 40/- for 12 months	..	480/-	
			2,964/-
			11,928/-
Allahabad Office	.. ..		600/-
Total Establishment including Allowances for existing staff	.. ..		12,528/-

Estimated Expenditure on Salaries and Allowances to staff and Establishment for 1953-54.

1. *Salary:*

Assistant Secretary at Rs. 400/- per month (in the grade Rs. 400-20-600)	Rs.	4,800
General Assistant (Sri M. Hajra) at Rs. 170/- for 8 months and at Rs. 180/- for 4 months (in the grade Rs. 80-10-220)	Rs.	2,080
Stenographer at Rs. 100/- (in the grade Rs. 100-5-200)	Rs.	1,200
Accountant and Cashier at Rs. 90/- (in the grade Rs. 90-5-130)	Rs.	1,080
Clerk-Typist (Sri B. Banerjee) at Rs. 50/- for 8 months and at Rs. 55/- for 4 months (in the grade Rs. 55-5-130)	Rs.	620
Despatcher and Diary Clerk at Rs. 55/- (in the grade Rs. 55-5-130)	Rs.	660
Literate Bearer (Ramesh Dey) at Rs. 22/- for 8 months and at Rs. 23/- for 4 months (in the grade Rs. 20-1-35)	Rs.	268
Peon (Umesh) at Rs. 16/- for 8 months and at Rs. 17/- for 4months (in the grade Rs. 16-1-30) ..	Rs.	196
Peon at Rs. 16/- (in the grade Rs. 16-1-30) ..	Rs.	192
Part-time typist for outstation General Secretary, at Rs. 50/- per month	Rs.	600
	Total Rs.	11,696

2. *Allowances:*

Asstt. Secretary (Dearness Allowance+Compensatory Allowance) Rs. 70/- (=17½%) Rs. 20/- (=5%) ..	Rs.	1,080
General Assistant Rs. 50/-+15/-	Rs.	780
Stenographer Rs. 50/-+15/-	Rs.	780
Accountant cum Cashier Rs. 50/-+Rs. 15/- ..	Rs.	780
Clerk-Typist Rs. 30/-+12/-	Rs.	504
Despatch-Diary Clerk Rs. 30/-+12/-	Rs.	504
Literate Bearer Rs. 30/-+10/-	Rs.	480
Peon Rs. 30/-+10/-	Rs.	480
Peon Rs. 30/-+10/-	Rs.	480
	Total Rs.	17,560

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5th	,,	1918, Lahore	5	10	0
6th	,,	1919, Bombay	3	0	0
7th	,,	1920, Nagpur	3	12	0
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12th	,,	1925, Benares	9	0	0
13th	,,	1926, Bombay	12	6	0
14th	,,	1927, Lahore	9	12	0
15th	,,	1928, Calcutta	12	12	0
16th	,,	1929, Madras	12	0	0
17th	,,	1930, Allahabad	15	0	0
18th	,,	1931, Nagpur	13	14	0
19th	,,	1932, Bangalore	18	12	0
20th	,,	1933, Patna	17	4	0
21st	,,	1934, Bombay	12	12	0
22nd	,,	1935, Calcutta	15	0	0
23rd	,,	1936, Indore	18	0	0
24th	,,	1937, Hyderabad	16	8	0
25th	,,	1938, Calcutta	30	0	0
26th	,,	1939, Lahore	20	0	0
27th	,,	1940, Madras	27	6	0
28th	,,	1941, Benares	30	4	0
29th	,,	1942, Baroda	25	8	0
30th	,,	1943, Calcutta	19	8	0
31st	,,	1944, Delhi	18	0	0
32nd	,,	1945, Nagpur	18	4	0
33rd	,,	1946, Bangalore	21	4	0
34th	,,	1947, Delhi	23	2	0
35th	,,	1948, Patna	23	0	0
36th	,,	1949, Allahabad	21	12	0
37th	,,	1950, Poona	23	12	0
38th	,,	1951, Bangalore	27	12	0
39th	,,	1952, Calcutta	32	0	0

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